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HENRY C. PEARSON, Editor

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THAT TIRED FEELING.

INDUSTRIAL fatigue in factory workers has been investigated very thoroughly in the last few years and the results should be of the greatest value to manufacturers. Leading investigators have been Professor A. F. Stanley Kent, M. A., D. Sc., of the University of Bristol, England; Professor Ernest G. Martin, Leland Stanford University; Professor Lombard, University of Michigan, together with French and Italian scientists. The tests prove, briefly, that overtime reduces production, that eight hours' labor produces more than twelve hours, and that Sunday work cuts down production. It is only fair to state that most of the great American factories are operated on eight-hour shifts, and that there is no Sunday work. There are still some factories that believe in long hours and bet on overtime, but they are growing beautifully less as time goes on, not from philanthropic but from business reasons.

PROFITEERING MUST CEASE.

THE indications that certain American producers will, apparently, fight the plans of the War Industries Board to have them sell war supplies to the allied governments at the same prices charged the United States set one to wondering what sort of American citizens such men can be—not patriots surely. America entered the war with noble purpose and in the spirit of an humanitarian duty to perform; every good citizen shared that opinion. The whole people is tired of price extortion at home, and now that the Allied cause is ours also the feeling of the majority regarding profiteering on war supplies going overseas has undergone a distinct change.

President Wilson voiced popular sentiment in a recent address when he said: "Patriotism leaves profits out of the question. In these days of our supreme trial, when we are sending hundreds of thousands of our young men across the seas to serve a great cause, no true man who stays behind to work for them and sustain them by his labor will ask himself what he is personally going to make out of that labor."

No argument should be necessary on the principle that as there is now a common purpose among the nations fighting for world democracy, and since the Allies are buying their supplies with American money, justice requires that costs be equalized. Reasonable profits sufficient to sustain American industry must be assured, but exorbitant profits all out of proportion to the cost of production cannot longer be tolerated.

Evidence accumulates to indicate that the war is quite as likely to be brought to a close by the economic collapse of Germany as by an Allied victory on the battlefield. America is already heavily financing the Allied nations, and in conserving their economic strength she conserves her own and hastens the coming of peace. Fair prices must obtain even though government price regulation and further legislation have to be resorted to in order to accomplish the desired end. Happily no act of the rubber industry has given cause to believe such extreme measures will become necessary. May other lines of manufacture emulate its unselfish example.

CORD TIRES UNDER FIRE.

IT has been demonstrated that pneumatic tires are not likely to be punctured by flying bullets, and that their use is practical for officers' and other light military cars when under fire. Cord tires running at the rate of ten miles an hour were subjected to rifle fire at 50 yards. Eleven shots struck, but either failed to enter the tires, followed the fabric to the rim and there emerged, or remained between rubber and fabric or between rim and inner tube. In no instance was the tube punctured, although a twelfth shot, fired squarely into the tread with the wheel standing still perforated casing, inner tube, rim, three-eighths-inch iron felly and shattered itself on the iron protecting plate of the wheel.

The result is attributable to the movement of the wheel, the deflecting angles at which the shots were fired, and the resiliency and flexibility of cord tire construction. Henceforth, the speed maniac will cease to fear the town constable who commands him to stop or have his tires decorated like a Swiss cheese.

THE CALL FOR TRAINED RUBBER CHEMISTS.

IN rubber, as in every other manufacturing business, the call is now for the man who knows. Chemistry is the common foundation of all great commercial industries. The time is past when industrial chemists were regarded as mere drug clerks; their achievements in applied science have won for them a full appreciation of their value to the community. Already they hold high government positions, become officers in the army and navy, and directors of great manufacturing companies. Everywhere they have demonstrated the tremendous earning power of chemical research and scientific control which increase production, utilize waste, devise improved methods and invent new products.

Twenty years ago a chemist with difficulty obtained employment in a rubber mill, and only within a very few years have rubber chemists been accorded the recognition they deserve. But the progress they have made during the past year in accelerators alone demonstrates the value of specialization and makes it certain that rubber manufacturers will lean upon them heavily in future. There is still much to be learned about this subject, about vulcanization, coagulants for rubber latex, accelerated aging tests, rubber compounds for special purposes, and many other important matters which rubber chemists must be depended upon to discover. Indeed, every rubber manufacturer now has his chemist, and several of the larger firms maintain research laboratories manned by a large corps of trained experts.

It is an encouraging sign of the times that men are being specially educated for such work in several lines. As has long been the case in Germany, the technical schools of America are at last awakening to our needs in applied science and beginning to cooperate with leading industries with an enthusiasm that promises splendid future results. At the Massachusetts Institute of Technology a new plan for cooperative education and research which is far reaching in scope has been put into operation. A five-year course in chemical engineering leading to an advanced degree has been inaugurated in connection with a School of Chemical Engineering Practice. At the plants of five large manufacturing companies, representing widely different fields of chemical engineering activity, the institute maintains a well-equipped station for instruction and research. Thus each company provides its plant as a working chemical engineering laboratory

for instructional purposes and the institute reciprocates with a research organization devoted exclusively to the specific needs of the company. In this manner a real cooperation for a common good is attained; the factory experience is invaluable to students, while the research facilities of the institute greatly benefit the company in solving its manifold technical problems. Such a combination of fundamental science with its immediate application cannot fail to produce the sort of men that rubber and other industries will henceforth find themselves much in need of. It is to be hoped that this course will soon embrace the rubber industry.

THE RUBBER SECTION MEETING AT BOSTON.

RUBBER chemists are busy as never before. They have many problems of common interest to solve quickly and well, and appreciate the need of discussion and comparison of ideas. The program for the annual meeting of the Rubber Section of the American Chemical Society at Boston early in September has been arranged with these thoughts in mind, and all indications point to an exceptionally large gathering of leading chemists from all sections of the country seeking the benefit of common council for their country and their companies.

THE GREAT PATRIOTIC BUSINESS CONVENTION.

THE great business convention to be held at Atlantic City, September 17-21, under the auspices of the Chamber of Commerce of the United States, promises to be the most notable gathering of commercial leaders that this country has ever seen.

How business, big and little, can come to the help of the country and of the world is what the convention will try to find out. It is a fine, practical conception and will result in great good.

WHAT FIRE ELIMINATION MIGHT ACCOMPLISH.

BECAUSE of the importance and variety of rubber goods among war munitions, fire precautions in rubber mills, as in other essential factories, will receive more than customary attention. What fire elimination might accomplish is quickly shown by government statistics. During the past ten calendar years fire losses in the United States have aggregated approximately \$2,000,000,000, the amount of the first Liberty Loan. The booklet, "Safeguarding Industry," with its directions for the prevention of fire, which has been issued by the National Board of Fire Underwriters with the indorsement of President Wilson, therefore deserves the thoughtful perusal of every manufacturer in rubber and allied lines. It emphasizes and illustrates the words of the President to the effect that "preventable fire is more than a private misfortune; it is a public dereliction."

What I Saw in the Philippines—III.

By the Editor of The India Rubber World.

Leaving Manila for the South—The Governor of Mindanao—On Board a Revenue Cutter—Sleeping, Eating and Living on Deck—The Beautiful Philippine Inland Sea—A Bit About Mindoro—The Chicago Plantation—Opon and Its Great Oil Factory—Dean Worcester at Home—Cebu—Visit from a German Propagandist—Visayan Laborers Board the Cutter—Something About This Type of Labor.

THIS being primarily a story of rubber hunting I shall, perhaps, be pardoned for postponing descriptions of Manila, Baguio *et al.*, as well as my thrilling adventures with calesas, carabaos, carromatas and other indigenous dangers. Nevertheless, I intend to return to them, for they should be chronicled for the benefit of those who follow.

The rubber lands of the Philippines really lie far to the south of Luzon, centering in and about the great island of Mindanao. I had long been in touch with a newspaper man in Zamboanga, the capital of that island, and through him had conceived a vast respect for Governor Carpenter, the present civil ruler. When, therefore, an influential American arranged for me to meet the governor, who was then in Manila, I was delighted. The meeting resulted in an invitation on the part of his excellency to visit the Southern Islands and to go on the revenue cutter "Mindanao," sailing the day following. I should say in explanation that the journey is a long one and rather difficult to negotiate. It is, of course, by water, the usual means of conveyance being the small inter-island boats that run at irregular intervals, and that are crowded with natives and freight to a degree that must be seen to be appreciated. There are, to be sure, the government transports, but unless one is in government service they are not available. Governor Carpenter's invitation was, therefore, eagerly accepted.

It was midnight when we went aboard, and within an hour we were quietly steaming out of the harbor and headed south. Even if it was a governor's boat it was crowded.



LEAVING THE HARBOR.

Six of us shared one tiny stateroom; not to sleep in, however. It was simply a dressing room, from which, pajama-clad, we emerged, climbed to the main deck and bestowed ourselves on cots. Of the six were a young architect from Boston in charge of Philippine public buildings, a lieutenant of constabulary on his way to Tawi-tawi, the superintendent of schools of Mindanao, and two Davao planters.

It was cool and comfortable on the windswept deck, and one clutched the blanket tight and slept, awakening every now and then to grab the clothes that the breeze had almost succeeded in blowing away.

Breakfast was served on the after deck at a long table at one end of which sat the governor, and at the other the alert captain of the steamer, while between were the passengers or guests, seven Americans, a couple of native priests and several Filipino officials. It was a very friendly and jolly company, and the fare, prepared and served by Chinese stewards, was excellent.

The captain was a young, athletic Californian, the only American left in inter-island service, and he was without

exception the most expert handler of a steam vessel that I have ever seen. When others would stop 50 feet from a pier and warp in, he ran boldly in, set the boat's nose against the quay so gently that the shock would not crack an egg, and then swung into place without bump or splash. Or if a native boat was in his berth, he slipped in and gently but firmly edged it away.

Breakfast over, the panorama of sea and shore was enthralling. I have traversed Japan's "Inland



GOVERNOR CARPENTER AND SULTAN OF SULU IN FRONT OF GOVERNMENT BUILDING, ZAMBOANGA.

Sea" by day and by night several times, and freely concede its beauties, but after three trips through the inland sea of the Philippine Islands, I think the latter by far the more beautiful. The climate is such that one's time is spent on deck; indeed, in all of the small steamers, staterooms, though furnished with berths, are used only for dressing; all sleep, eat and live in the open.

The islands, big and little, are forest clad to the tops. Passing between them in bright sunlight over a sea rippled by gentle breezes, close to cloud-capped shores, glimpsing native settlements of Nipa houses, meeting fleets of fishing boats with their double bamboo outriggers, watching for and seeing flying fish, porpoises and an occasional huge sea turtle, interest is ever kept alive.

After leaving Manila and coasting down by the provinces of Cavite and Batangas, it is a good 12 hours to the entrance of the long Verde Island Passage between Luzon and the great forested island of Mindoro. Possibly the boat stops at the little cement pier at Calapan to send telegrams. If so, the picture of the native town fringing the shore of the great shallow bay is one not soon to be forgotten. Indeed, few see even as much as this of this sparsely settled island. If one really visits the island for scenery or sport, he takes a boat from Manila to Port Galera, which will some day be a show place of the islands. The



PARA SEEDLINGS, "CHICAGO" PLANTATION, MINDORO.

money and no experience in rubber planting. They sowed the seeds thickly in rows, and let them come up as planted. The result was a growth that looked like bamboo, so tall and slender were the trees. Later, when they desired really to give them a chance, the experts said they were too large for transplanting. The head of the agricultural department in Manila, however,

advised digging trenches along the rows, to preserve laterals, and cutting off all but about two feet of the tap roots. This was done, and every tree not only lived, but grew amazingly. Some 3,000 were thus treated, and they are now ready to tap and apparently as well off as they could be in any part of the world.

A curious fact about this plantation is that it is so far untouched by typhoons, and likely to continue safe. This is undoubtedly due to its being in the shadow of Mt. Halcon and the range that it dominates, which form a very effective wind-break.

I met one of the owners of "Chicago" at the Golf Club at Caloocan. He is an attorney in Manila, and was not at all sure as to what the future of the plantation would be, as it seemed to him that so far Americans had taken but little interest in Philippine rubber. Should such interest develop he saw a future in it as a seed producer for those who planted, say in Mindanao. As the trees have already begun to seed abundantly, this is very far from being a dream.

An American friend long resident in the Philippines, and one who thoroughly believes in the future of *Hevea* there, was almost absurdly chagrined over this plantation. Said he:

"I wish a typhoon would wipe it out today! The danger is that this, which is really in the typhoon belt, because of its wind-break, will not be harmed. Taking it as an example, enthusiastic Americans will rush plantings into other places in the zone of big winds, where there are no barriers, and have their whole planting destroyed. Then they and others will



claim that rubber cannot be safely grown here. Until rubber growing on a big scale is an accomplished fact, plantings in sections that are not ideal should be prohibited."

Curiously enough the nearer one gets to the country said to be swept by big winds, the less one hears of their alleged



VIEW OF "CHICAGO" HEADQUARTERS, MINDORO.

scenery is marvelous, both on shore and beneath the waters of the crystal-clear sea. Here a glass-bottomed boat would disclose marine growths and brilliantly tinted fishes that far outclass those of the Bermudas or the Hawaiian Islands. There are no hotels, not even rest houses, but safe camping places and excellent sea bathing. This island is noted as the home of the timarao, a small and exceedingly wild carabao. It is sometimes killed by big-game hunters, and is a sport fully as arduous and dangerous as tiger hunting.

For those interested in rubber, it is a bit of a surprise to know that on this island, only 100 miles from Manila, is a *Hevea* plantation some six years old. It is situated but a few miles from Calapan, and is locally known as "Chicago." At the time of its beginnings the Americans in charge had little

destructiveness, and as for signs of destruction, they do not appear to be in evidence.

All day long and all of the night following we steamed through straits, sounds, seas, bays and bodies of water big and little, by islands tiny and huge, until we began to realize what the geographers meant when they said there were really more than 3,000 islands in the Philippines. Finally, on the afternoon of the second day, we passed through a narrow, picturesque strait between the islands Mactan and Cebu. On the first named is the modern plant of the Visayan Refining Co., a big coconut oil mill installed by Dean C. Worcester. Strung along the shore are, first, the great oil factory, with its storage tanks and the bungalows of the resident officers, and, separated from plant and bungalows by a tiny creek, the village of Opon. This last named consists of one long street bordered by Nipa huts terminating in a plaza with market, ancient cathedral and a flourishing native school.

In visiting the plant one is impressed by the industry and alertness of the native workman. Only the chiefs of departments are Americans, the mass of workmen being Filipinos. In the village the people look healthy, well fed and contented, and show themselves to be exceedingly courteous. The great factory itself is the last word in intelligent equipment and arrangement for economical and efficient production.

Dean Worcester's house is, perhaps, the most roomy and best designed tropical house in existence. Situated so that the monsoons can sweep through every room, with broad verandas completely encircling it, finished in beautiful native woods, it is simple, homelike and elegant. Nor is it cumbered and cluttered with trite curios. There are a few rare ones, but each has

inspiring. Tropical nature has indeed favored this lovely spot.

The most picturesque and interesting feature, however, is the head of the home. As one who was in "at the beginning," who hob-nobbed with head hunters, traveled where white men had never gone before, organizing, pacifying, botanizing, observing, he is one of the commanding figures in that part of the world. The most marvelous part of his career, however, is that, dropping state work, he should enter the field of manufacture and install successfully a great industry among alien, and to a degree hostile, people, and do it to their benefit and his.

It is some seven miles from Dean Worcester's plant to the city of Cebu on the great island of Cebu. This city is noted as being one of the oldest in the islands. It looks even older than that. We were hardly fast to the

big stone quay—American made—when a young German came aboard with a word of introduction wired by friends in Manila. He was interested in a rubber plantation further south, and told me all about it, how to reach it and so on. While we were chatting one of the Americans strolled up and stood looking intently and I thought eyeing him very searchingly. Later, the German having departed, the American said,

"Did X say why he took such long journeys into the interior from time to time?"

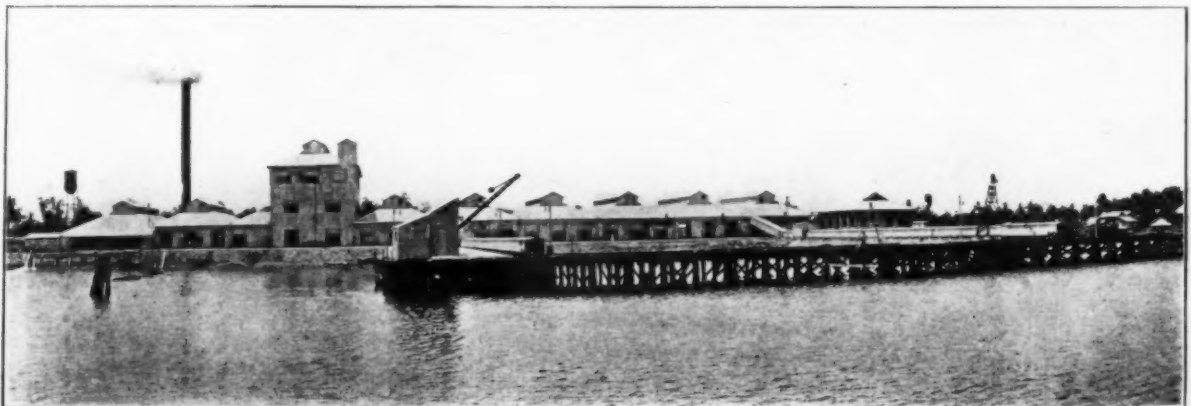
"No, what's the answer," I replied.

"I don't know yet, but it will all come out in time."

And it did. With the declaration of war by the United States the young German was at once locked up. It seems he had lists of former insurgents and had been visiting them secretly, giving them \$5 a head and arranging for a general rising against the Americans. The insurgents accepted the cash and were profuse



TYPICAL NATIVE VILLAGE WATERFRONT.



DEAN WORCESTER'S GREAT OIL MILL AT OPON.

either some definite use or a historic or intrinsic value that earns it a place in such a home.

The situation of the house is such that in any direction there stretches a panorama of sea, shore, coconut grove, native village and picturesque mountain. Added to this are cloud effects seldom equaled, which, with the brilliant blues and greens in the waterways, make a whole that is ever changing and always

in promises, but when the time came not one insurrected. Nevertheless, the American men resident there who had entertained him at their homes, and admitted him to their clubs will not soon forget that he tried to bring about destruction of their property and perhaps a massacre of their wives and children.

I had heard so much of the impossibility of getting laborers in the Philippines that when some 70 jolly, tough little Visayans

swarmed aboard at Cebu and overran all of the lower deck, I began to ask questions.

"Good workers? Sure," said the planter to whom they were consigned. "Better than Chinamen. We pay their passage down and they work, say, for a season or for a year, and then go home. In that lot are 20 old hands. The rest are new recruits. Labor scarce? I should worry! Aren't we shipping lots of these same Visayans to Hawaii to work on the sugar plantations there?"

"Do you have trouble with them?" I asked.

"Some. That little clerical-looking chap aft is an agitator. He is from Manila and is down here to start trouble. When we come to my pier he will make impassioned speeches and try to get the men on a strike. His stunt will be to yell, 'You have been deceived! Do not get off the boat.' It will appeal to some of them, but my 20 old hands, who want the work and who know they are well treated, will pull the other way and we don't lose many of them, if any."

The laborers are easily managed, but are very like children, and the employer needs to be not only just, but tactful and ex-

vaseline, the cure is complete and the man goes back to work wholly satisfied.

If, however, the employer refuses to consider and treat the scratch and brusquely sends the man away, he is likely to spoil an otherwise competent laborer. The man will depart grumbling, his sense of injury will grow and he will continue troubled, half sick and wholly useless.

(To be continued.)

WORKMEN'S COMPENSATION ACTS.

The National Industrial Conference Board, Boston, Massachusetts, composed of representatives of 16 national industrial associations, including The Rubber Association of America, has published an eight-page summary of the Board's report on the legal phase of Workmen's Compensation Acts in the United States. The history of such laws is outlined briefly, supplemented by tables showing when they were enacted by the different

states, territories, foreign countries and provinces. The compensation principle and constitutional questions involved are reviewed, and special emphasis is laid upon the lack of uniformity in state laws and the inconsistencies growing out of their interpretation. An exclusively compulsory compen-

sation system is advocated throughout the country to be substitutational for and not supplemental to employer's liability, claims to be settled directly between employer and employe conditioned by adequate safeguards for the protection of the latter. The compilation, under expert guidance, of a permanent, scientific, uniform system of accident data, compensation statistics and judicial decisions, it is

stated, would go a long way toward establishing definite insurable standards of liability and of equitable premium rates. The full report is obtainable at \$1 per copy postpaid.



FREIGHTER LOADING COCONUT OIL AT OPOH.



FILIPINO FISHING BOAT.

lengthy descriptions of symptoms. During this recital the uncovering of the wound is abandoned, for one must perforce use convincing and appropriate gestures. Then, too, the narrator becomes so enthralled with his tale of suffering that he forgets the wound and abandons himself to a perfect orgy of painful experience and self pity. When at last a tiny scratch is uncovered, gravely examined and gingerly touched with carbolated



THE "MINDANAO" ON THE BEACH.

Automobile Tire Fabrics.

By Alvin Kingsbacher.

THE bigness of this subject lies not only in its possibilities, but in its very realities. The present-day application of tire fabric to industry and to society is enormous and one may naturally but wrongly infer that a greater development is likely to result from the present unprecedented demand for it.

I am prepared to contradict the belief—widely current, generally accepted and apparently supported by fact—that tire fabric is in its experimental stage. There have been so many innovations attempted, such as the substitution of ramie for cotton, the twisting of a wire with the component cotton threads of the yarn and the experimentation with other than plain weaves, such as leno and similar ones, that the failure of all these has not only removed the possibility of further development in tire fabric but has reflected greater merit on its present qualities and construction. In mentioning these various experiments it may be well to make evident in a brief manner the cause of their failures.

The substitution of a stronger material for cotton has necessitated the introduction of a fiber which has not the necessary properties of elasticity and flexibility. Any increase in strength without these qualities would not be considered an improvement, but rather a detriment. In twisting wire with cotton threads the difficulty encountered is to secure a wire of such a material as will possess the same elasticity as the cotton. Another feature of this construction is that the wire will tend to cut the cotton or other fibrous material.

In using leno or other weaves which, by crossing the threads, yield a stronger fabric, the objection arises from the cutting action of the threads. The effect of tire service on a fabric is so peculiar that it would not be long before the threads would cut each other in the places where they cross. From these observations of what has already been tried, it is natural to suppose that tire fabric has long since ceased to be an experiment. It stands to-day as a scientific certainty and is as much a standard commodity as army duck or any such similar fabric.

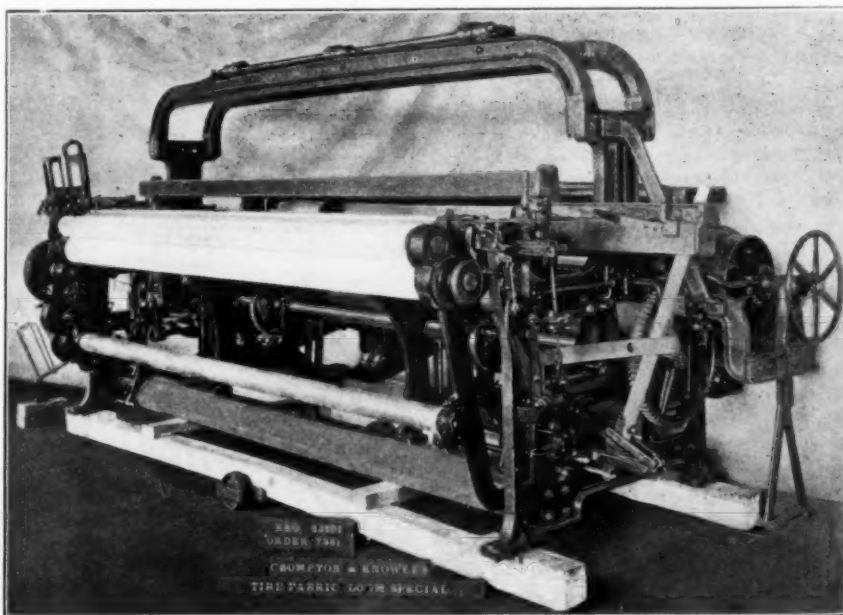
It is not my intention, nor have I the ability, to expound the theories of tire manufacture. My experience has been gleaned, firstly, in a cotton mill running exclusively on tire fabric, and secondly, in a tire factory as fabric analyst. It is my desire to combine these experiences in such a way as to give not only a fair idea of how fabric is made, but also what is expected

of it by the manufacturer who endeavors to make a reliable tire.

The pneumatic automobile tire is a complex combination of fabric and rubber. It has been created like most other inventions to meet existing demands, and having arrived at its present efficient stage, has succeeded in establishing for itself a monopoly, opposed to which countless devices designed to supplant it have not even made an impression.

The name "automobile tire fabric" is generic. It includes many kinds of fabric which are used in the construction of a tire, but the most important of these and the one that is used in greatest quantity is the "building fabric." It is estimated that of this style alone about sixty million square yards are used annually. In addition to this building fabric there are various other fabrics that go into the making of a tire. These sundry fabrics include special construction, known as "chafing fabric," "breaker fabric" and others, such as "Osnaburghs," "sheetings" and "tapes." The last two are used more especially in the process of tire manufacture and are not an inherent part of the tire itself. Then there is another fabric called "thread" fabric that is frequently used in making certain types of beads.

Before approaching the subject of fabric construction, I wish to outline in a crude and desultory manner the various processes through which the fabric must go before it becomes part of a tire. When the fabric is received at the tire factory it is inspected by the proper officials, and of this I shall deal at greater length later, but in this connection it is well to state that not all tire factories maintain a de-



A MODERN TIRE FABRIC LOOM.

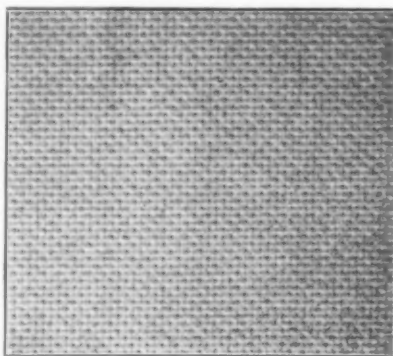
partment of this kind. It is to the credit of a few that they do maintain this department. It bespeaks a high standard of quality, and the rigidness and thoroughness of inspection in regard to fabrics betokens a similar care and exactness in the selection of other materials and in the various processes of the manufacture.

After the inspection comes the drying process. The fabric is run over hot rolls and all the moisture extracted, as it is essential that the fabric be dry before it is coated with rubber. The "calendering" or "frictioning" process is the means of forcing the rubber compound into and onto the fabric. The spaces or "pores" in the fabric are filled with rubber and then the fabric is "skimmed" or coated with a layer of rubber. The fabric is then ready to be cut into strips, the cutting being on a 45-degree

angle in order to secure a greater strength and to prevent the unraveling of the threads in the strips. These strips, in various plies, depending on the size of the tire, are finally built up on a mold or iron core to form the fabric for the tire.

BUILDING FABRIC.

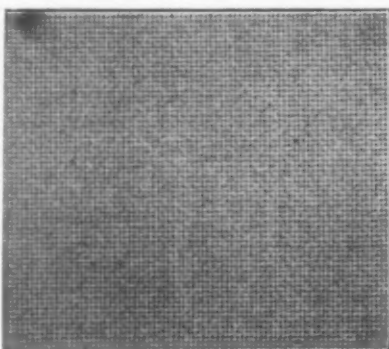
The "building fabric," as previously mentioned, is the body of the tire. It is the most important fabric and as such must possess above all, strength, flexibility and elasticity. The fabric is a plain weave, and weighs approximately 17.25 ounces to the square yard. The yarns from which this building fabric is made are 11/22.5 or 11/23. The twist in the single yarn



BUILDING FABRIC.

is from 14 to 16 and the ply yarn is 4 to 5 turns per inch. The texture is 23 ends and 23 picks per inch. The gage of thickness of the fabric is .040 inch. The water content should not be over 5 per cent. The take-up is found to be about 14 per cent and the contraction of filling about 10 per cent, leaving normally a difference of 4 per cent in the amount of warp and filling yarn stretch. This is an important point in the construction of tire fabric. It is obvious that if the difference is too great, the filling, when the fabric is subjected to a strain, will arrive at its straight length before the warp and consequently will weaken or break before the straight length of the warp is reached. When the percentages of crimp or bend in the warp and filling are about equal, or within 5 per cent of each other, the warp and filling will tend to reinforce each other. In my capacity as fabric inspector I have analyzed so-called tire fabrics which had 32 per cent take-up in the warp and 7 per cent stretch in the filling. The difference of 25 per cent made them totally unfit for use in tires, although the fabrics were in every other respect perfect.

Building fabric is used in various grades, but the construction remains the same. Sakellaridis, or cotton grown in Egypt from Sea Island seeds, is a material that has become very prominent. The staple is longer and stronger than Sea Island, but is not quite so elastic. In color it is a yellowish white, a compromise between Sea Island and Egyptian. Long staple Sea Island, Combed Egyptian and Carded Egyptian are also used in great quantity, chief and most important of which is Sea Island.



CHAFING FABRIC.

Strength obviously is the paramount feature in a tire fabric and upon this factor there cannot be put too much emphasis. Every tire manufacturer, even though he has no fabric inspection department, has at least a tensile strength testing machine. There are various ways of testing, and each method results in a different standard of strength. For example, breaking a 3-inch strip in a 2-inch jaw is virtually

testing two inches of fabric, but will yield a higher strength test than if just two inches are tested. This is because the two inches in the former case are reinforced by the threads adjacent, although not held in the jaws of the machine. The standard of strengths, as stated below, is based on a different method of testing and yields a lower but truer breaking strength. A piece of fabric is unraveled down to one inch, representing in number of threads the exact texture of that inch. This strip of fabric is placed in the jaws and tested for strength, and can indicate no greater strength than the exact number of threads that inch actually possesses. According to this method of testing the following standard for strength in building fabric is obtained:

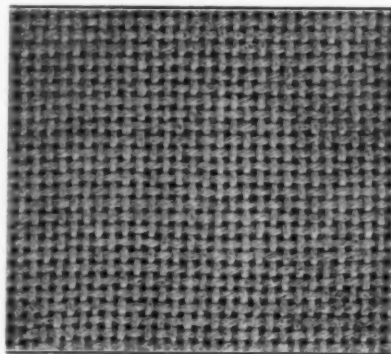
	Warp	Filling
Sakellaridis .....pounds	340	360
Sea Island	319	320
Combed Egyptian	275	285
Carded Egyptian	260	270

A question may arise as to the cause of the difference in warp and filling strength. When it is remembered that the warp is woven under considerable tension, this difference in strength is readily understood.

BREAKER FABRIC.

The breaker fabric is applied on the tire just beneath the tread and its purpose is to protect the building fabric and to distribute the shock that the tire necessarily receives on the road over as

great a surface as possible. There are many and varied constructions of breaker fabric, each manufacturer having his own particular weave and construction. The average breaker fabric, if such there be, is somewhat similar in construction to the building fabric in respect to the yarns. The texture is very much lower in order to permit large openings in the fabric to accommodate more rubber than the other fabrics. The weight varies, of course, with the construction, but usually is somewhere around 10 ounces to the square yard. Twelve ends and thirteen picks per inch give the necessary openness to the fabric. The weave will vary anywhere from a plain weave to a mock leno. It is made of Sea Island, Combed Egyptian or Carded Egyptian. It is difficult to set a strength standard for this fabric, as any change in texture, weave or yarns will greatly modify any standard which may be placed upon it. However, with a construction such as is outlined above the breaking strength would be as follows:



BREAKER FABRIC, SQUARE WEAVE.

	Warp	Filling
Sea Island .....pounds	160	180
Combed Egyptian	140	155
Carded Egyptian	115	130

CHAFING FABRIC.

The chafing fabric is used on the side walls of the tire where more flexibility is required, and is of necessity a lighter fabric. It is a plain weave weighing 9 ounces to the square yard. The yarns are 4/22.5 or 4/23. The gage or thickness is .022. There are 34 ends and 34 picks to the inch. It is made of Sea Island or Combed Egyptian and the breaking strengths are as follows:

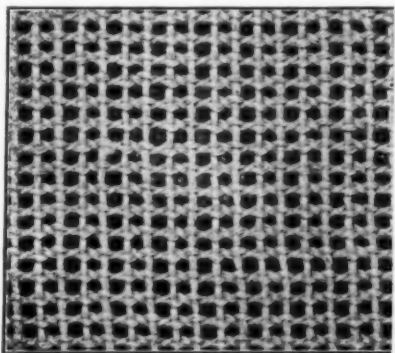
	Warp	Filling
Sea Island .....pounds	155	170
Combed Egyptian	125	140

The other fabrics, Osnaburgs, sheetings and tapes, need no particular mention, as they are standardized fabrics and differ in no respect from the fabrics that are on the market today.

Before discussing the inspection of the tire fabric, I want to touch upon some of the precautions that are taken in the mill in order to turn out a perfect fabric.

SPINNING, WEAVING AND FINISHING.

The spinning of the yarns is, of course, an important step in the work, and it follows that unless the maximum strength of the cotton is secured here the succeeding process of manufacture cannot yield a suitable tire fabric. The twisting of the single yarn into ply yarn is not such a simple problem as it appears. When 11 single threads are twisted into one there is always a possibility of one or more threads breaking and the twisted yarn continuing in its whirly course with a fewer number of component threads than the requirements demand. This feature is known as "dropped ends" and is a serious weakness when found in the fabric. It is absolutely essential that every piece of yarn should have its required number of component threads through its entire length; and to twist it with this un-failing accuracy involves the human element more than the mechanical, as the result depends largely upon the skill and alertness of the operatives. Throughout the entire handling of the yarns, warp and fabric, there must be avoided any contact with oil, dirt or grease. Rubber will not adhere to an oily or greasy fabric and the tire manufacturer is very particular in regard to the cleanliness of the fabric which he buys. The mill runs its looms on all grades of yarn separately. A weaver may be running one loom on Sea Island and another on Egyptian and may inadvertently mix the bobbins, weaving into a Sea Island fabric one or more bobbins of Egyptian yarn.



BREAKER FABRIC, LENO WEAVE.

Such a fabric is said to have "mixed filling" and is generally rejected by the fastidious fabric buyer. It is important that there be no broken or knotted threads. When a filling thread breaks, the pick is pulled out entirely and the loom started with a new pick in its proper shed. In the case of a warp thread the yarn is spliced; that is, two or three component threads are knotted at a time in different places so that the binding of the broken yarn does not make a bulky knot. There must be no holes in the fabric and everything about it must be even and uniform. After the weaving comes the mending, burling, mill inspection, finishing and packing. The fabric is rolled and wrapped with paper and burlap for shipping.

TESTING.

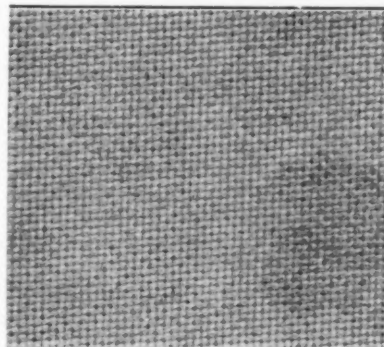
The fabric, being a plain weave and of heavy construction, appears to most persons as a very simple one, but this idea is abandoned when the number and diversity of tests which the fabric must undergo at the tire factory, is known. These tests may be divided into two classes; the physical and the visual inspections.

The physical tests include tests for strength, weight, thickness, or gage, texture, take-up, contraction of filling, and water content. When these physical tests are made and found satisfactory the fabric is run over an electrically lighted inspection perch. This is the visual inspection and by its means every defect or irregularity in the construction of the fabric becomes apparent. The irregularities that are looked for are as follows:

Loop Knots
Warp Knots
Beat Ups
Bad Start Ups
Uneven Fabric
Slack Filling

Slack Warp Ends
Pulled-in Selvage
Reed Marks
Drop End Yarn
Split End Yarn
Oil Stains

Hard Twist Yarn
Soft Twist Yarn
Mixed Warp or Filling
Mispicks or Double Picks
Smashes
Floats



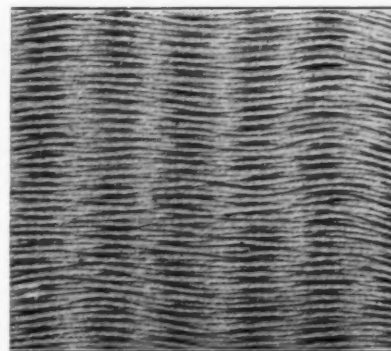
BEAD FABRIC.

While the presence of any one of these may not of itself constitute sufficient grounds for rejection, a combination of several of them or the frequent recurrence of one of them, would place the fabric in the imperfect class and render it unfit for use in tires. These strict specifications and requirements for tire fabric give an idea of its importance in the building of tires. However, with increased knowledge of rubber compounds and tire construction, the importance of tire fabric may be in a measure reduced. These two need not necessarily conflict, as in its present form the pneumatic tire of to-day requires all the strength, flexibility and elasticity that can possibly be brought forth in a fabric.

COTTON TRADE NOTES.

THE Cookson Tire Fabric Co., Mansfield, Massachusetts, is being organized by Jos. H. Cookson, formerly superintendent of the Jencks Spinning Co., Pawtucket, Rhode Island, who will have associated with him a group of local capitalists. A site has been secured, and contracts for machinery and equipment have been placed. The initial equipment is to consist of 40 cards, 7,000 spindles and 20 looms, with complementary machinery.

W. Irwin Bullard, treasurer of the Goodyear Cotton Mills, of Goodyear, Connecticut, and vice-president and general manager of E. H. Jacobs Manufacturing Co., is to be in charge of the textile department established by the Merchants National Bank, of Boston, Massachusetts.



BEAD THREAD FABRIC.

In many ways Goodyear, Connecticut, is developing rapidly as a result of its tire fabric mills. New machinery is being installed which will increase the present weekly capacity of 100,000 pounds to 130,000 pounds. A new cotton storehouse with a capacity of 10,000 bales has been erected, and attractive modern cottages are being built along the lines of those at Goodyear Heights, Akron, Ohio. A total of 88 has already been put up. Social as well as industrial progress is being manifested through the Goodyear Band, singing orchestra, motion picture theater and weekly community dances during the winter months.

War News of the Rubber Industry.

THE DRAFT IN RUBBER MILLS.

PROBABLY few industries have as large a percentage of young men of conscription age as are to be found in rubber mills. The prevalence of piece work is doubtless responsible for it. In Akron, "the rubber city," the majority of employes in the leading factories are between the ages of 21 and 31. From 10,000 to 12,000 Goodrich men are subject to call; 7,000 to 8,000 Goodyear men are similarly affected, likewise 4,000 to 6,000 Firestone men. While tire concerns such as these are particularly hard hit, they have taken a patriotic stand in claiming exemption for only a relatively few men who are extremely valuable to them, believing that in throwing their strength behind the present draft fewer men will be needed later.

The War Department startled rubber men by estimating Akron's population at 330,000, as against the 150,000 claimed by local authorities. A first draft of 2,200 men, based on that figure, will seriously hamper rubber mills, as even now it is difficult to obtain sufficient help to operate at full capacity.

At the outset it was believed that only a few hundred men in each factory would be affected by the first call and that many of them with wives and families would be exempted, but the high percentage of exemption claims throughout the country has resulted in a general relaxation of physical qualifications and the refusal of many local boards to exempt men with wives and children unless proof could be shown that they would suffer or become public charges. Rubber companies are, therefore, confronted with the immediate problem of filling many vacancies for the duration of the war. Girls and older men must be depended upon in most instances, especially the former, as a shortage of male labor exists in almost every industry. In Canada, England, France, Italy and Russia young women have bravely undertaken the work of men, and with the utmost success. In rubber manufacture they are to be found in every department except the milling room, and time may get the stronger women there too.

Although American women are no less willing or courageous, it is to be hoped that no dependents, perhaps physically unfit to withstand its rigors, will be forced into this work while thousands of unmarried alien men of military age and allied nationality escape service under any flag. While doing their best in men and industrial production for Uncle Sam, American rubber companies should stand firmly behind the principles of alien conscription and soldiers' insurance, that as few as need be of our wives, mothers and sisters be forced into factories, and that those who must make this or other sacrifices be assured a just reward should their loved ones be incapacitated or fail to return.

THE FAVORABLE SHIPPING OUTLOOK.

Importers of crude rubber and exporters of manufactured rubber goods find the present shipping outlook very heartening. Despite German submarine activities, statistics of the Department of Commerce show that our imports for the month of June broke all records by a large margin, and our exports exceeded those of any month except last January, while our total ocean-borne trade for the fiscal year ended June 30, was carried to a high level never dreamed of before the war, an increase of nearly 50 per cent over 1915.

During the past six months U-boats have sunk only a fraction of the tonnage predicted by German experts, and the undersea fleet itself has suffered such losses that probably less than 200 submarines are now available for service. Arrivals and sailings at British, French and Italian ports are on the increase and neutral shipping is suffering less than formerly. On July 1

the British merchant marine comprised 18,000,000 tons of seaworthy ships of all kinds, and according to carefully compiled figures in the "London Times" Great Britain and the United States will in 1917 turn out a new ship tonnage in excess of that destroyed during the year, while in 1918 British and American shipyards will probably build no less than 8,000,000 tons of standardized cargo vessels.

Meanwhile, conditions will be improved by an arrangement nearing completion between Great Britain and the United States for joint control of the world's shipping. The Shipping Board is about to commandeer the entire American seagoing tonnage, not for government operation but for control of charters, direction of trade routes, priority of shipments and to lower freight rates so as to insure fair, rather than extortionate profits harmful to the allied cause. Our export embargo is bringing neutral shipping under United States control, both Norway and Holland having already offered to release virtually half their tonnage in return for food shipments, and the more recent embargo on iron and steel required for ship construction will bring the growing Japanese Pacific merchant fleet into Atlantic service. Apparently the complacency of rubber companies regarding their incoming and outgoing shipments is justified, and the complete elimination of the Goethals-Denman controversy lends a sense of added security.

THE AMERICAN AERIAL FLEET.

Absolute air supremacy is primarily responsible for recent allied gains on the western front. This supremacy must be maintained and increased despite Germany's feverishly hasty building program. That the United States will do its part and more in air service was assured when, late in July, the \$640,000,000 aviation bill became law, the largest single appropriation ever passed by Congress for one project.

Less than half this amount is to be expended in the purchase of airplanes alone. Personnel, training equipment, overseas maintenance, spare parts, flying stations, armament and scientific apparatus, all are to be provided for and are equally as important as the manufacture of the machines. One hundred and ten thousand officers and enlisted men—an army of the air greater than our standing army of a few months ago—will be needed. The whole project is one which appeals to the imagination of our people and to the genius of our American engineers, who, with the cooperation of the Society of Automotive Engineers, have worked out standardized types of fighting, reconnaissance and bombing airplanes for quantity production under the direction of Howard E. Coffin, chairman of the Aircraft Production Board of the Council of National Defense. More than 20,000 planes are to be built as a first increment and more will follow as needed.

THE WAR INDUSTRIES BOARD AND PRIORITY.

While the newly appointed War Industries Board represents a notable step forward and will doubtless accomplish much toward concerted action in production and distribution, it must necessarily labor under great difficulties in having no direct vested powers. Its functions, like those of the Council of National Defense, are merely to investigate and recommend, yet the executive and administrative departments of the government are lending it hearty support. Such matters as a general basis of prices on war materials for the government and the Allies, and priorities on government and allied contracts are already under consideration and a satisfactory conclusion may be anticipated.

It is expected that this board will eventually develop the need of an organization with all the powers of the British Ministry

of Munitions to minimize the disruption of normal business life by the war; to eliminate the harmful results of uncontrolled prices, and to prevent a breakdown in the distribution of the nation's output.

As a forecast of what may eventually develop in America, the workings of the Priority Branch under the British Ministry of Munitions are of interest to the rubber industry, because among the many industries affected are rubber trades and manufacture, including footwear; waterproofing of fabrics; manufacture of coal-tar and other chemical products; textile trades and manufacture and machinery.

The Priority Branch in England has for its function the bringing about of harmonious actions between the conflicting demands of the different departments of the Ministry of Munitions, of the Admiralty, the war and other government offices, the railroads, the mines and other quasi-public services and approved private industries, which are in more or less active competition for their share of raw materials, manufacturing capacity and labor.

The committee meets every day and no priority can be granted unless all present agree. One objection rejects an application—but this decision is not final. The representative of the interested department may withdraw the application and refer the matter through the chief of his department to some one representing the Minister of Munitions, who is the final authority.

A manufacturer instructed as to priority by the committee can himself issue certificates to bring about similar priority on materials of sub-contracts for his contract.

All persons engaged in certain industries have their work divided into three classes—*A*, *B* and *C*. *A* is war work, *B* other work of national importance, and *C* is all work not comprised in the other two.

Class *A* comprises work or material wholly required as a component part of any work or goods to be carried out or supplied under

(a) A government war contract which signifies: 1—Any contract placed by the Admiralty, the War Office or the Minister of Munitions; 2—Any contract for naval or military equipment placed by an allied government by or with the consent in writing of the Admiralty, the War Office, or the Minister of Munitions.

(b) Certified war work which signifies: 1—Work on a contract or order which the Admiralty, the War Office, or the Minister of Munitions has certified in writing to be war or munition work; 2—Work which the Minister of Munitions has directed to be treated on an equality with war work.

(c) Merchant shipping work certified in writing by the Board of Trade to be munitions work.

The priority branch grants priority in class as follows:

- 1—Most urgent war work.
- 2—Very urgent war work.
- 3—Urgent war work and
- 4—War work.

In addition there is an emergency classification which takes precedence over all.

The manufacturer is not compelled to accept work from the government and when a manufacturer accompanies an order to another manufacturer with a certificate which would entitle this order if accepted, to priority, the manufacturer to whom the order is tendered need not accept the order unless he desires to sell. There is, however, strong indirect pressure to accept priority orders because a priority order gives assurance that steel and other scarce raw materials may be secured, that transportation will be afforded, and also that a plant engaged upon priority work will have an adequate supply of labor.

The priority committee issues orders from time to time that no scarce material shall be used except on Class *A* work or Class *A* and *B* work.

Reports are required of all stocks in Great Britain of certain listed scarce material, and from time to time the Minister of Munitions takes possession of all stocks of certain character.

From time to time the priority branch requests of the manufacturer, a list of all of his orders, giving customer's name, and full particulars including what proportion of the work remains to be done.

WATERPROOF FABRICS FOR BALING ARMY STORES.

A new use has been found for waterproof fabrics. The Storage Committee of the Council of National Defense is urging all shippers to adopt every measure possible to minimize the need for railroad cars, and their use for storage purposes. The advantages of motor trucks for short hauls are being emphasized; likewise the importance of creating additional storage facilities at points of production to avoid congestion in manufacture, and at points of consumption that railroad cars may be unloaded promptly.

That every car may be loaded to its maximum capacity with the minimum of packing material, baling or compressed bulk packing is developing great possibilities for saving transportation space. The Quartermaster's Department of the army is already baling socks and blankets and satisfactory progress is being made toward baling uniforms, shoes and even prunes. The bales are covered with waterproof material which will later be used for sand bags at the front. Its use makes possible the employment of flat cars when box cars are not available.

It would seem that several articles of rubber manufacture would lend themselves to bulk packing, such as hospital and camp sheetings and blankets, waterproof fabrics for all purposes, leggings, ponchos and rubberized clothing of every sort, gas masks, rubber springs, gaskets, washers and valves, sponges, hot water bottles, ice bags and caps.

STYLE CONSERVATION.

The Commercial Economy Board of the Council of National Defense has recently recommended that manufacturers reduce the number of styles of their goods and that in place of elaborate, fancy styles the output should be confined as closely as possible to standards. The board has stated that in some lines this reduction could be as high as 25 to 50 per cent without inconvenience to customers.

As regards the rubber business, interviews with leading manufacturers show that, as a rule, they do not consider any great reduction of styles possible except with a resulting diminution of business. Take, for instance, tennis shoes: While the leading manufacturers do most of their business on three or four standard lines, there is a demand for finer goods on which the sales, in comparison, are few but, in the aggregate, many. With the leather shoe manufacturers putting a lot of style in their product the rubber shoe producers find there is a demand for similar "classy" shapes, with high heels and canvas tops, in rubber-soled footwear. The United States Rubber Co. endeavors to get out as few styles as possible with which to satisfy the demands of its customers and the public. It is the opinion of the sales manager that the proposition of the Economy Board is impracticable, as far as tennis goods are concerned.

Regarding rubber footwear, that is, overshoes of all kinds, the same conclusion holds. Rubber shoes must fit reasonably well the prevailing styles of leather footwear, and therefore the makers of overshoes must make a larger variety than if leather shoes were standardized.

In rubber and other waterproof clothing the action of the branch store managers at a meeting in Chicago early last month indicates the situation. These managers advocated a material reduction of models and styles to be introduced this season, and in consequence of this recommendation the company will feature standard models, patterns and styles, which make for economy and the best value for merchants and consumers, which decision is in accord with the company's policy of standardizing the rain-coat business.

Among tire manufacturers the opinion is that something could be done, although this field for the practice of economy in styles, sizes, etc., is not so rich in opportunity as many others. The expensive equipment of cores, molds and machinery for tire making represents an outlay that could not be charged off in part without serious effect on the balance sheet. The tread types appear to be jealously guarded as part of the selling assets and the result of advertising expense that could hardly be dispensed with and meet competition. The tires are really known by their treads.

GOVERNMENT USE OF LEATHER SUBSTITUTES.

When a peaceful nation like the United States goes to war the drain upon leather stocks is tremendous. For instance, in July the Quartermaster-General's Department awarded contracts for 2,175,000 pairs of marching and field shoes. Large quantities of saddles, harnesses, puttees and other articles, in whose manufacture leather is absolutely indispensable, are also being purchased. This sudden demand, in addition to the normal needs of the country, makes it necessary to conserve leather by employing other materials wherever possible. For several years American manufacturers have been turning out leather substitutes of the celluloid type, that have proved highly satisfactory for upholstery purposes, seat cushions, book binding and the like.

After exhaustive tests government officials have adopted certain grades for different purposes. The most important immediate use will be in ship upholstery, for which purpose its waterproof quality, freedom from mildew and mold are particularly important. It is uniform in thickness, strength and quality. It also saves the waste usually lost in cutting out imperfections and irregular edges of leather, as well as the expert labor necessary to do such cutting. Du Pont Fabrikoid is being manufactured in large quantities for the purpose.

MEDICAL RUBBER GOODS MANUFACTURERS.

The government will require enormous amounts of surgical rubber goods, and to facilitate the placing and filling of orders the Medical Rubber Manufacturers' War Emergency Association has been formed. A. W. Warren, of the Hodgman Rubber Co., Tuckahoe, New York, is president; W. S. Davison, of The Miller Rubber Co., Akron, Ohio, is vice-president, and J. Russell Parker, of Parker-Stearns & Co., Brooklyn, New York, is secretary and treasurer. These gentlemen form the committee having for its object the purpose of mobilizing the manufactures of any or all lines of surgical rubber goods with the idea of taking care of the requirements of the Army, Navy, Red Cross, and possibly the Allies, during the continuance of the war. This committee is to obtain from each manufacturer data as to his capacity for producing any of the lines of merchandise required, samples of the merchandise itself, and the price at which they are prepared to supply it. All prices are presumed to be based on costs plus 10 per cent. This committee is acting as a sub-committee of the Committee of National Defense, and is supposed to transmit to headquarters its recommendations as to the quantity of goods to be allotted to each manufacturer and the price.

There are three sub-committees working in connection with this executive committee; one of which, with W. S. Davison as chairman, has charge of the orders of surgeons' gloves, catheters, colon and rectal tubes; the second, under chairmanship of A. W. Warren, will handle the requirements for rubber sheeting and rubber coated goods of all kinds; the third, under the chairmanship of J. Russell Parker, is devoted to hot water bottles, fountain syringes and goods of that character.

It is estimated that the manufacturers of these various lines who will cooperate in this movement have a combined capital of over \$100,000,000 and facilities for turning out these classes of goods in any desired quantity in a minimum time after receiving orders. Druggist's sundries of American manufacture have already established a reputation for reliability in Europe.

EMBARGO LIST EXTENDED.

Supplementing the embargo proclamation of July 15, an account of which was published in the INDIA RUBBER WORLD, August 1, 1917, President Wilson has announced two lists of commodities which cannot be exported, except under special license, after August 30. One list prohibits practically every article of commerce being shipped from this country to enemy nations or to neutral countries of Europe. The second list, for which license is required for shipment to the Allies, their dependencies and the neutral countries of both continents, includes several additional chemicals, ingredients and materials not mentioned in the previous proclamation. As forecast in our previous account, cotton and cotton linters are now on the prohibitive list. Other commodities more or less important in the rubber industry are benzol and its derivatives, benzine, gasoline, ether, cottonseed oil, linseed oil, rapeseed oil, corn oil, glycerin, toluol, resin, turpentine, sulphur, acetone, ammonia and ammonia salts, sulphuric acid, nitric acid, white lead, lead, zinc, copper, plumbago. Copper wire and electrical equipment, electrical motor accessories, aeronautical machine parts and accessories are also included in this second prescribed list.

The regulations, orders, limitations and exceptions prescribed will be administered by and under the authority of the Exports Administrative Board from whom licenses in conformity with said regulations, orders, limitations and exceptions will issue.

CAPTAIN BUCKLETON AIDS RED CROSS.

Captain Ernest E. Buckleton, whose services as a soldier and as one of the first who hastened to the help of the suffering Belgians are well known, although unable to continue in active service at the front because of injuries sustained at the battle of Loos, is still at work for the Allies. In gaining money for the Red Cross and in talks to recruits at various American camps, he has done much. As we go to press word comes that, during a week-end at Orleans, Massachusetts, he reviewed and addressed the newly formed Home Guard. He also spoke for the Red Cross in the local theater, on Trench Warfare and the historic retreat from Mons to the Marne. Not only was the building filled, but hundreds were turned away. The collection for the Red Cross taken at that time amounted to \$125.

SERVICE PERSONALS.

Francis E. Drake, general European agent of the United States Rubber Co., has resigned that position to serve on the staff of General Pershing at the front in France.

Thomas F. O'Neil, advertising manager of the General Tire & Rubber Co., Akron, Ohio, has enlisted in the naval militia and is in training at Tarrytown, New York.

Frank R. Bacon, president of the Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, has been called into service as a captain in the Federal commissary department.

C. V. McMillan, manager of the Wichita, Kansas, branch of The B. F. Goodrich Co., Akron, Ohio, has enlisted in the Kansas Field Artillery. N. A. Nelson succeeds him as local manager.

Sergeant P. F. Talley, a veteran of the Philippine and Boxer campaigns, has succeeded Lieutenant Walker in charge of the drill classes of The Goodyear Tire & Rubber Co., Akron, Ohio. Lieutenant Walker having been called to active service with the Ohio National Guard.

Frank Waldo, of the firm of E. M. & F. Waldo, 11 Broadway, New York city, has been selected as a candidate for appointment as an officer in the United States Army and has been directed to report at Plattsburg, New York, on August 25, where he will enlist for a period of three months for training purposes.

Second Lieutenant M. DeMott Letherman, of the United States Rubber Co., New York office, has sailed for France, with a party of American officers, to observe French trench tactics.

Walter H. Nolan, assistant manager, Springfield, Massachusetts, branch, The B. F. Goodrich Co., is at Plattsburg, New York.

COMPANY NOTES.

The United States Tire Co., New York City, has made extensive alterations in factory equipment for the manufacture of solid tires for Class A and B military trucks, according to the standard design worked out by the Motor Transport Board of the War Department with the cooperation of the Society of Automotive Engineers.

H. F. Davenport, secretary of the Brunswick-Balke-Collender Co., Chicago, Illinois, is prepared to demonstrate very graphically, in the form of an open letter to the trade, just what \$9,000,000,000 signifies, this being the amount the Secretary of the Treasury McAdoo states will be spent by the government and our allies within the United States during the next year.

Girls employed by The Fisk Rubber Co., Chicopee Falls, Massachusetts, are taking an active part in war activities. The Fisk Unit of the Volunteer Clerical Corps, which is helping the government with the vast amount of detail work incident to registration and other new enterprises of the war, has alphabetized and classified over 15,000 registration cards in western Massachusetts. Delegates have also been sent every evening to the Springfield Armory, an army service rifle manufacturing establishment, where greatly increased production requires much additional clerical work.

The Fisk girls are also active in Red Cross work, and as several Fisk men are in the Second Regiment, Massachusetts National Guard, an ambulance was presented to that regiment by the Fisk company.

The first woman motor truck driver in western, perhaps in all, Canada is Mrs. Eva Crane, who drives one of the delivery cars for the Winnipeg branch of the Dominion Rubber Sytem. In her appropriate khaki suit Mrs. Crane loads and unloads her own car; gets her orders from the office; delivers goods to cus-



tomers and railways, and works beside the warehouse men in the shipping department. She asks and accepts no assistance other than is ordinarily accorded to a man on the job. Her work is entirely satisfactory and she is satisfied with her position. "I took the job," she said, "so that some healthy, physically fit man could go overseas and fight alongside my husband and brothers in the trenches."

The Rubber Trade Roll of Honor.

Reported by The Rubber Association of America.

Numbers in parenthesis following individual names indicate branches of service as shown by the key list on page 708.

APSLEY RUBBER CO., HUDSON, MASSACHUSETTS.

MASSACHUSETTS NATIONAL GUARD.

Ralph P. Hopkins	William G. Tenney
Warren Leary	Michael F. Sullivan
Edward Thomas	Harry E. Hadlock
Edwin J. Hadlock	J. Raymond Hogan
Paul Jones	Joseph Kevit
Harold Matthews	Frank McCarthy
Stephen MacLellan	Edwin F. Beavis
Emil Dupont	Charles Baggs
Thomas Flannagan	
Cecil Benway (39)	Philip Bishop (8)
Harold Claflin (16)	Jesse A. Gates (2)
Fred L. Parchert (16)	Wallace Rixford (39)
William Storey (2)	

BISHOP GUTTA-PERCHA CO., NEW YORK CITY.

Chester Prowdman (2)	George Jolly (2)
Edgar Fessender (2)	Charles Haney (2)
Michael Latonne (2)	John Pfingst (33)

ESSEX RUBBER CO., INC., TRENTON, NEW JERSEY.

Gustave Fischer (4)	Alex Ryan (3)
Edward Blydenberg (9)	Elmer Cross (6)
George T. Oakley (7)	John Simcock (9)
Frank Backes (15)	

HODGMAN RUBBER CO., TUCKAHOE, NEW YORK.

U. S. ARMY.

Frank Jozzi	Clarence Ruppert
Thos. Semenza	Vincent Salemme
Louis Addinizio	Romeo Florri
Jerome Millik	Frank Jocco
G. Rivellini	E. De Martini
G. Sacchi	J. Sartin
Joseph Reed (2)	Joseph Grogan (2)
E. G. Beer (20)	T. J. Harrigan (2)
Charles Sergeant (2)	F. H. Giffing (19)
S. Nusso (2)	

HOOD RUBBER CO., WATERTOWN, MASSACHUSETTS.

FOREIGN SERVICE.

I. Dranjimetricu	H. Sahogoni
H. Hohannesian	I. McDonald
H. Markarian	F. Zakarian
Murdock Campbell	Paul Gormley
Francis Waldron	

KATZENBACH & BULLOCK CO., NEW YORK CITY.

George A. Yoerger (19)	J. S. Ackerman (16)
------------------------	---------------------

L. & M. RUBBER CO., CARROLLTON, OHIO.

Harry Deets (3)	Wayne Wiggins (3)
Earl Long (2)	

MANHATTAN RUBBER MANUFACTURING CO., PASSAIC, NEW JERSEY.

NEW JERSEY NATIONAL GUARD.

John Van Houten	A. T. Derron
R. A. Jackson	Wm. Scott
Wm. Handschul	John Czingili
John Bill	Wm. Reay
Richard Lullwitz	Henry Gatti
Richard M. Rush	Eugene Banker
John Hand	John Stromach
Dennis H. Keane	Louis Servat
Wm. Morris	Harold Moseley
Jos. Libak	Steve Pristash
Timothy McNeill	John Devlin
Irving Mandeville	Albert Miller
John Hootnik	Anthony Dennis, Jr.
Geo. Jones	John Borach
Stanley Gaglansky	Louis Raymon
Albert Whitelaw	E. D. Ingalls (35)
H. G. Wotherspoon (10)	Howard A. Herty (10)

MIDLAND TIRE & RUBBER CO., COSHOCTON, OHIO.

Archie Clark (1)	Earl Dunbar (1)
Fred Ralph (1)	

MILLER RUBBER CO., AKRON, OHIO.

U. S. ARMY.

John F. Babbit	H. J. Gewinner
John Rogers	George Bruner
Paul Pierce	Emmett Hickman
C. H. Miller	Floyd Dietrick
Walter Vaughn	Charles Meinhart
Froud Wargo	Frank Doudna
Theodore Colgate	Ray Straub
Otto C. Sheipan	F. W. Frankhauser
Geo. J. Bender	Percy Reid
Elmer Spearing	Charles Hoag
Bixler Allen	I. C. Jump
John Keimel	Thomas A. Boulton
Dan Kumerine	Lawrence Womer
John Boslooper	John Isler
R. Dennis	H. Zook
Jack O'Brien	Garrett Cleafont
Judge Layter	Arthur Posschl
John McManus	F. Backnee
Ben Favender	Frank Goddard
Alonzo Burk	Walter Holder
Herbert Cook	Harvey Welton
Chas. Harmen	Harvey Seedle
Stephen Sophis	James Burris
	E. C. Crawford

MISHAWAKA WOOLEN MANUFACTURING CO., MISHAWAKA,
INDIANA.

U. S. ARMY.

F. Claeys
N. Storms
N. Goodwin
C. Edsall
O. Goossens
J. DeRuppe
H. Suisher
H. Gunnett
Joe Van de Putte
Bazill Lerne
Fred Bumiller
F. Fump
G. Holcomb
A. Humboldt
M. Lichtenberger
L. Hanson
I. Hendrickson
Benj. Fetters

Geo. Hopper
M. Bekaert
E. Allison
M. Stanard
C. Auwenroyge
F. Maes
W. Koczpinski
C. Lynn
Frank Decker
Lawrence Bultinck
H. Larnelle
L. Lorois
C. Roderick
E. Nye
R. Pittman
W. Green
F. Gzwiak

COAST ARTILLERY CORPS.

S. Quick
W. Atkinson
C. Foster
P. DeGroot
E. Stanley
Ray Warniers (18)
Julius Dutoe (18)
C. Clifford Casper (24)
D. Rushman (24)
A. Willard (6)
L. Holderman (5)
Hardy Stebbins (5)
John McNeill (20)
John Schmidt (2)
Arthur Shafer (11)

A. Singer
A. Sheteron
C. Rice
Rosco Warren
Russell Hawkins
Chas. Smith (18)
C. Verstraete (18)
E. O. Brvant (24)
H. Brundage (4)
H. Williams (6)
A. Roper (5)
F. Stebbins (20)
Glenn D. Babcock (20)
Harold E. Gardner (11)
Ralph J. Hutchinson (11)

NATIONAL TIRE & RUBBER CO., EAST PALESTINE, OHIO.

Robert Spaulding (15)
Oscar Erickson (37)
Neil Crate (38)
Harry Garrique (15)

Ernest Mansel (37)
Harry Barnhouse (15)
Leroy Dodge (38)
Charles Flowers

PACKARD ELECTRIC CO., WARREN, OHIO.

Clyde Green (37)

John Thornberg (37)

PEARCE RUBBER CORP., PHILADELPHIA, PENNSYLVANIA.

George Copple

John Kennedy

PORTER RUBBER CO., SALEM, OHIO.

Oscar Maxetta (6)

PORTLAND RUBBER MILLS, PORTLAND, OREGON.

Glenn Nourse (40)
Eiler Erickson (40)
Loren Sturgeon (11)
Alexander Robb (1)
G. C. Spokesfield (15)
Paul Reese (5)

James Parker (40)
Fred Tomlinson (40)
Christian Zents (1)
Albert Hough (16)
Harold Smith (24)

RUBBER INSULATED METALS CORP., PLAINFIELD,
NEW JERSEY.

James Joyce (2)
Arthur John Morris (2)

Arthur Robinson (2)

RUBBER REGENERATING CO., NAUGATUCK AND DERBY, CON-
NECTICUT, AND MISHAWAKA, INDIANA.

U. S. ARMY.

James Donfero
Omar Abraham
F. Barrett
A. Clark
Ben Davis
F. Godfrey
C. Miars
R. Robbins
J. Wasser

Clarence Warner
C. Broyles
G. Cullers
A. Frase
A. Hunt
Marvin Morris
H. Young
Lloyd West

INDIANA NATIONAL GUARD.

R. Byer
F. Fifer
Ray Parks
M. Zimmerman
Edw. Doneth (2)
R. Spencer (2)
P. P. Arthur (41)

S. Davis
P. Genevecki
R. Stiver

E. Hine (2)
S. H. Yoder (2)
D. J. Lautz (42)

SAFETY INSULATED WIRE & CABLE CO., NEW YORK CITY.

E. P. Benjamin (15)

H. A. Dearing (43)

STANDARD FOUR TIRE CO., KEOKUK, IOWA.

D. H. Seeman (3)
Lee Patterson (27)
Ralph O'Brien (3)

Jack Weiss (14)
Hernie Myers (72)

STANDARD TIRE & RUBBER MANUFACTURING CO.,
CLEVELAND, OHIO.

Everett Swan
Clyde Glynn
Leo Scaglions

Carl Roberts
John Wicker
D. G. Hauscheer

STERLING TIRE CORP., RUTHERFORD, NEW JERSEY.

George T. Booth (15)
Earl Lascalle (28)
P. S. Jacobson (3)
A. O. Whyte (2)
W. C. Brenner (1)

Maurice L. Lee (2)
John Dunn (3)
Raymond Johnson (1)
Earl D. Brooke (2)
A. T. Fleming (33)

H. F. TAINTOR CO., NEW YORK CITY.

Starr Taintor (2)

Herbert T. Spooner (20)

THERMOID RUBBER CO., TRENTON, NEW JERSEY.

U. S. NAVY.

Marvin Wood
Philip Ashbrand
Charles Brown
Raymond Koenig
William Koons (12)
George Lavatsky (1)
Ernest Hilton (1)
Lawrence, Dolan (5)
Francis Apgar (31)

I. J. Quigley
Fred Schilling
Harry Wissmann

Charles Harding (12)
James Murphy (1)
Stanley Voorhees (5)
Joseph Williams (31)
William McNeal (31)

UNITED STATES RUBBER CO., NEW YORK CITY.

W. H. Palmer (36)
T. H. Young (5)
J. Huggard (2)
A. Gallagher (2)
C. A. Bechtel (16)
W. D. Jones (11)
Herbert Lord (21)
E. H. Wells (20)
Irwin Hurst (1)
Joseph Clause (3)
Orson Parkenson (2)
L. G. Truesdell (1)
B. J. Lemon (20)
L. P. Thomas, Jr. (23)
Henry Trowbridge (17)
I. B. L. Orme (20)
F. C. Batchellor (20)
M. G. Shepard (30)
D. A. Wilcox (11)
Edward R. Bartlett (20)

H. J. Haefelein (36)
D. Gunn (19)
J. L. O'Toole (1)
J. Foltz (16)
F. P. Riley (11)
P. M. Brown (25)
O. P. Friend (2)
John Henkle (11)
E. Sheridan (2)
Robert Stuart (2)
Richard T. Robinson (1)
J. F. Nelson (19)
Homer Steel (22)
Arthur Gray (19)
Edward W. Vaill (20)
Louis C. Geils (32)
B. J. Lemon (11)
T. W. Janeway (8)
Joseph F. Schneider (20)
L. Horak (19)

WILSON TIRE & RUBBER CO., SPRINGFIELD, ILLINOIS.

C. H. Cook (2)
W. A. Rodger (26)
A. B. McCoy (18)
Charles A. Campbell (18)

M. R. Rodger (26)
G. J. Murphy (26)
Jerry Grady (18)

KEY TO BRANCHES OF SERVICE.

1. U. S. Army.
2. U. S. Navy.
3. U. S. Marine Corps.
4. U. S. Aviation Corps.
5. U. S. Cavalry.
6. U. S. Field Artillery.
7. Coast Patrol.
8. Coast Artillery Corps.
9. Navy Department.
10. Quartermaster.
11. Quartermaster's Department.
12. Mosquito Fleet.
13. Foreign Service.
14. Electrical Engineer.
15. Hospital Corps.
16. Ambulance Corps.
17. American Ambulance Corps, France.
18. Medical Corps.
19. U. S. Naval Reserve Corps.
20. Officers' Reserve Corps.
21. Naval Coast Reserve.
22. U. S. Medical Reserve Corps.
23. Officers' Training Corps.
24. U. S. Engineers.
25. Harvard Regiment.
26. Illinois National Guard, Cavalry.
27. Iowa National Guard.
28. Maryland Naval Militia.
29. Massachusetts National Guard.
30. Engineers' Training Camp.
31. New Jersey National Guard.
32. New Jersey National Guard, Field Artillery.
33. New York National Guard.
34. New York National Guard, Cavalry.
35. New York National Guard, Engineers.
36. New York Veteran Corps of Artillery.
37. Ohio National Guard.
38. Pennsylvania National Guard.
39. Vermont National Guard.
40. Oregon National Guard.
41. French Colors.
42. Field Ordnance.
43. New York National Guard, Machine Gun Co.
44. New York National Guard, Hospital Corps.
45. Indiana National Guard.

Rene L. Robiquet, for some years with the London and Manas houses of Alden's Successors, Limited, who is fighting for his native land as a private in the 24th Regiment of Infantry of France, has won the *Croix de Guerre* "for great bravery in the field and devotion to duty." M. Robiquet married an Englishwoman, who, with their daughter, is living in England.

Bowers' Specific Gravity Tables.

IN the August issue of THE INDIA RUBBER WORLD the Bowers' table for computing the approximate weights of disks was published in full and also several samples were given to illustrate the method to be followed in making computations. The table for cylinders that follows is used in determining the weight of cylinders such as typewriter platens, tubes, bands, springs, tubing, made on a tubing machine or by hand, cylindrical coverings for shafts and paper mill rolls. The range of the table is from 1/64 inch to 3 inches for cylinders of customary measurements.

CYLINDER TABLE.

The stated base of the cylinder table is 62.4256 + pounds per cubic foot.

The unit used is .00133 ounce equals a cylinder 1/64 inch diameter, one foot long. Specific gravity 1.00.

$$.00132996 \text{ ounce} \times (12 \times 64)^2$$

$$= 62.4256 + \text{pounds.}$$

$$.7853982 \times 16$$

Weight of one cubic foot of water 39.1 degrees F. (maximum density) = 62.425 pounds. (Kent, 1916 edition, page 27.)

To convert the cylinder table into weights according to above standard multiply by 0.9999 + or divide by 1.00001 ±.

The cylinder table is constructed to read from 1/64 inch diameter up, in the same manner as the disk table:

1/64 inch to 3 inches by 64ths in ounces	
1/32 inch to 6 inches by 32nds in ounces	
1/16 inch to 12 inches by 16ths in pounds	
3/8 inch to 24 inches by 8ths in pounds	
et cetera	
1 1/64 inch = 5.61925 ounces	4
2 1/32 inch = 22.47700 ounces	4
4 1/16 inch = 89.90800 ounces = 5.61925 pounds	4
8 1/8 inch = 22.47700 pounds	4
et cetera	
16 1/4 inch = 89.90800 pounds	

The variation between the weights of a cylinder one foot diameter, one foot long, specific gravity 1.00 determined from the disk or cylinder table is as follows:

Cylinder table	49.029120000 pounds
Disk table	49.007296512 pounds
Difference	0.021823488 pounds

The combined use of both the disk and cylinder tables in one calculation will be found convenient, practically accurate results will be obtained.

The volumes of two similar solids are to each other as the cubes of their linear dimensions. (Kent, 1916 edition, page 62.)

To determine the weights per gross of washers and kindred articles, the combined use of the following factors and the cylinder table will simplify the calculations:

144 disks one inch diameter	=	1 cylinder one inch diameter
1/64 inch thick	=	3/16 foot long
1/32 inch thick	=	3/8 foot long
1/16 inch thick	=	3/4 foot long
1/8 inch thick	=	1 1/2 feet long
3/16 inch thick	=	3 feet long
et cetera		

SAMPLE.

Washers—1 1/2 inch diameter, 1 inch hole, 3/4 inch thick, Specific Gravity, 1.50.

COMPUTATION.	
1 1/2	= 12.25728 ounces
1	= 5.44768
	6.80960
144 × 3/4 inch	= 3 feet
	20.42880
	1.50
	102144000
	2042880
	30.6432000 ounces per gross

SAMPLE.

One gross 6 inch A. S. M. E. gaskets, 3/16 inch thick, Specific Gravity 1.62, 11 inch diameter, 6 inch hole, 8 3/4 inch bolt holes on 9 1/2 inch bolt circle—(Kent 1916 Edition, page 209).

COMPUTATION.	
11 inch diameter	= 41.19808 pounds
6 inch hole	= 12.25728
	28.94080
Less 8 3/4 inch bolt holes at 26068	= 2.08544
	26.85536
144 × 3/16 inch	= 2.25 feet
	13427180
	5371072
	5371072
	604245100
	1.62
	1208490200
	3625470600
	604245100
	97.887706200 or 97 7/8 pounds per gross

SAMPLE.

Tubing—3/16 inch hole, 1/16 inch wall, Specific Gravity 1.83.

COMPUTATION.	
5/16 inch	= .53200 ounces
3/16 inch	= .19152
	.34048
	1.83
	102144
	272384
	34048
	.6230784 ounces or 4 pounds light per 100 feet

SAMPLE.

Cylinder—6 inch diameter, 5 inch hole, Specific Gravity, 1.68.

COMPUTATION.	
6 inch	= 12.25728 pounds
5 inch	= 8.51200
	3.74528
	1.68
	2996224
	2247168
	374528

Note:
6 inch = 1 1/2 inch read in pounds
5 inch = 1 1/4 inch read in pounds
6.2920704 pounds or 6 1/4 pounds per foot

SAMPLE.

Roll—12 inch finished diameter, 96 inch face on 10 inch shaft, Specific Gravity, 1.73.

COMPUTATION.	
12 inch	= 49.02912 pounds
10 inch	= 34.04800
	14.98112
	8 feet
	119.84896
	1.73
	35954688
	83894272
	11984896

Note:
12 inch = 3 inch read in pounds
10 inch = 2 1/2 inch read in pounds
207.3387008 pounds or 207 1/4 pounds finished weight

SAMPLE.

Roll—45 inch finished diameter, 72 inch face on 42 inch shell, Specific Gravity 1.85.

COMPUTATION.	
45 inch	= 689.47200 pounds
42 inch	= 600.60672
	88.86528
	6 feet
	533.19168
	1.85
	266595840
	426553344
	53319168

Note:
45 inch = 16 × 2 13/16 inches in pounds
42 inch = 16 × 2 3/4 inches in pounds
986.4046080 pounds or 986 pounds finished weight

APPROXIMATE WEIGHTS OF CYLINDERS—SPECIFIC GRAVITY 1.00

COMPUTED BY GEORGE W. BOWERS

Basis—Cubic Foot = 62.4256 + lbs. Awd.

Diameters in Inches.	Ounces per Foot.	Diameters in Inches.	Ounces per Foot.	Diameters in Inches.	Ounces per Foot.
1 64	.00133	1 1 64	5.61925	2 1 64	22.13253
1 32	.00532	1 1 32	5.79348	2 1 32	22.47700
3 64	.01197	1 3 64	5.97037	2 3 64	22.82413
1 16	.02128	1 1 16	6.14992	2 1 16	23.17392
5 64	.03325	1 5 64	6.33213	2 5 64	23.52637
3 32	.04788	1 3 32	6.51700	2 3 32	23.88148
7 64	.06517	1 7 64	6.70453	2 7 64	24.23925
1 8	.08512	1 1 8	6.89472	2 1 8	24.59968
9 64	.10773	1 9 64	7.08757	2 9 64	24.96277
5 32	.13300	1 5 32	7.28308	2 5 32	25.32852
11 64	.16093	1 11 64	7.48125	2 11 64	25.69693
3 16	.19152	1 3 16	7.68208	2 3 16	26.06800
13 64	.22477	1 13 64	7.88557	2 13 64	26.44173
7 32	.26068	1 7 32	8.09172	2 7 32	26.81812
15 64	.29925	1 15 64	8.30053	2 15 64	27.19712
1 4	.34048	1 1 4	8.51200	2 1 4	27.57888
17 64	.38437	1 17 64	8.72613	2 17 64	27.96325
9 32	.43092	1 9 32	8.94292	2 9 32	28.35028
19 64	.48013	1 19 64	9.16237	2 19 64	28.73997
5 16	.53200	1 5 16	9.38448	2 5 16	29.13232
21 64	.58653	1 21 64	9.60925	2 21 64	29.52733
11 32	.64372	1 11 32	9.83668	2 11 32	29.92500
23 64	.70357	1 23 64	10.06677	2 23 64	30.32533
3 8	.76608	1 3 8	10.29952	2 3 8	30.72832
25 64	.83125	1 25 64	10.53493	2 25 64	31.13397
13 32	.89908	1 13 32	10.77300	2 13 32	31.54228
27 64	.96957	1 27 64	11.01373	2 27 64	31.95325
7 16	1.04272	1 7 16	11.25712	2 7 16	32.36688
29 64	1.11853	1 29 64	11.50317	2 29 64	32.78317
15 32	1.19700	1 15 32	11.75188	2 15 32	33.20212
31 64	1.27813	1 31 64	12.00325	2 31 64	33.62373
1 2	1.36192	1 1 2	12.25728	2 1 2	34.04800
33 64	1.44837	1 33 64	12.51397	2 33 64	34.47493
17 32	1.53748	1 17 32	12.77332	2 17 32	34.90452
35 64	1.62925	1 35 64	13.03533	2 35 64	35.33677
9 16	1.72368	1 9 16	13.30000	2 9 16	35.77168
37 64	1.82077	1 37 64	13.56733	2 37 64	36.20925
19 32	1.92052	1 19 32	13.83732	2 19 32	36.64948
39 64	2.02293	1 39 64	14.10997	2 39 64	37.09237
5 8	2.12800	1 5 8	14.38528	2 5 8	37.53792
41 64	2.23573	1 41 64	14.66325	2 41 64	37.98613
21 32	2.34612	1 21 32	14.94388	2 21 32	38.43700
43 64	2.45917	1 43 64	15.22717	2 43 64	38.89053
11 16	2.57488	1 11 16	15.51312	2 11 16	39.34672
45 64	2.69325	1 45 64	15.80173	2 45 64	39.80557
23 32	2.81428	1 23 32	16.09300	2 23 32	40.2708
47 64	2.93797	1 47 64	16.38693	2 47 64	40.73125
3 4	3.06432	1 3 4	16.68352	2 3 4	41.19808
49 64	3.19333	1 49 64	16.98277	2 49 64	41.66757
25 32	3.32500	1 25 32	17.28468	2 25 32	42.13972
51 64	3.45933	1 51 64	17.58925	2 51 64	42.61453
13 16	3.59632	1 13 16	17.89648	2 13 16	43.09200
53 64	3.73597	1 53 64	18.20637	2 53 64	43.57213
27 32	3.87828	1 27 32	18.51892	2 27 32	44.05492
55 64	4.02325	1 55 64	18.83413	2 55 64	44.54037
7 8	4.17088	1 7 8	19.15200	2 7 8	45.02848
57 64	4.32117	1 57 64	19.47253	2 57 64	45.51925
29 32	4.47412	1 29 32	19.79572	2 29 32	46.01268
59 64	4.62973	1 59 64	20.12157	2 59 64	46.50877
15 16	4.78800	1 15 16	20.45008	2 15 16	47.00752
61 64	4.94893	1 61 64	20.78125	2 61 64	47.50893
31 32	5.11252	1 31 32	21.11508	2 31 32	48.01300
63 64	5.27877	1 63 64	21.45157	2 63 64	48.51973
1	5.44768	2	21.79072	3	49.02912

When extreme accuracy is not required the cylinder table may be used to determine weights of round flange rings using average of circumferences for length of cord.

SAMPLE.

Round Flange Ring— $7\frac{7}{8}$ inch diameter, $7\frac{1}{8}$ inch hole, $\frac{1}{4}$ inch round flange.

COMPUTATION.

$$\begin{array}{rcl} \frac{1}{4} \text{ inch diameter} & & = .34048 \text{ ounces} \\ 7\frac{7}{8} \text{ inches average circumference} = 23.955 \text{ inches} & = & \frac{2 \text{ feet}}{.68096 \text{ ounces}} \end{array}$$

AMERICANIZATION ACTIVITIES IN RUBBER MILLS.

IN response to the questionnaire issued to firm members by The Rubber Association of America at the request of the Immigration Committee of the Chamber of Commerce of the United States of America, the following interesting data have been compiled from the replies from 78 establishments, 52 of which reported a total of 26,003 foreign-born workmen, or 29 per cent of the total number employed.

Averages show that at least 15 per cent of these foreign-born workmen cannot speak English well enough to understand even the simplest commands. This condition is most striking in the larger plants—two employing 7,500 and 3,000 foreign-born respectively, reporting 53 and 75 per cent. In 45 plants only 27.3 per cent of the foreign-born have been naturalized, while in seven plants the number is not known. In other words, 72.7 per cent of the foreign-born workmen, or 21.08 per cent of the total workmen are aliens. In 35 plants it is known that 71 per cent desire to become citizens, while in 17 of these the number reaches 100 per cent.

When asked whether a census covering these points would be of value, 12 answered affirmatively, six negatively and 34 did not reply. The replies showed that the number of foreign-born and their ability to speak English was quite generally known, but the naturalization status was but roughly estimated by 45 plants and only 35 had any idea whatsoever of the number desiring citizenship.

Seventeen plants help their employees to learn English, but only two conduct classes within the plant, the attendance being on company time in one and on the employees' time in the other. However, 27 cooperate with public night schools and 14 arrange adjustments between the class hours and plant shifts to make continued attendance possible. All endeavor to treat foreign and native-born alike and 39 discourage all epithets such as "dago," "hunkie," etc.

Central employment offices are maintained by 36 plants, to handle all matters pertaining to hiring, firing, promotions, transfers, voluntary lay-offs, and other matters relative to promoting fair treatment for foreign-born workmen. The incentives to create a contented and stable labor supply vary. Safety and first-aid work are maintained by 36, lunch rooms by 20, wash rooms by 29, while insurance benefits are given by 29, and bonuses by 18. Seven plants do specific work for the housing of their workmen. Welfare work of various kinds is carried on by 21 plants, while 26 keep in touch with social-betterment movements in the community, which affect their workmen.

It is interesting to note that in the six plants employing over 1,000 foreign-born, the 19,495 foreign-born employees constitute 47.5 per cent of the total employees, at least 35 per cent do not understand English and only 14.2 per cent have been naturalized. A chart which has been prepared in this connection, shows that as the average ability to speak English increases and approaches 100 per cent the percentage of employees naturalized also approaches the same maximum. The results also show that the alien's desire for citizenship increases in direct proportion to his ability to speak English, which is his medium for the absorption of American ideas and thus an index of his ability to appreciate the value and meaning of American citizenship.

At a time when business is lending all efforts toward maximum efficiency Americanization work takes on greater than normal importance and the further suggestions of the Immigration Committee, based on the conditions as reported, commend themselves to every manufacturer.

1. GENERAL. In practically all cases there is lurking a complete and coordinated plan of work for all the personnel activities of the plant under the supervision of a trained and tactful director.

2. CONFERENCES. Collective action is needed and frequent conferences with superintendents and foremen will help to create a clear understanding.

3. A CENTRAL EMPLOYMENT DEPARTMENT should be organized under the direction of a responsible executive, which shall have charge of all personnel work. All matters connected with employment, transfer, promotions, layoffs, dismissals, physical conditions, affecting the comfort and social needs of the men inside the plant and all community relationships affecting education, citizenship, housing and standards of living, should be cleared through this department, no matter what their source. It should be the clearing house for employees where grievances and complaints can be heard and adjusted and advice and information can be given.

4. REGISTRATION. All applicants for employment should be registered when they apply for work even though a vacancy does not exist, so that immediate contact can be made later.

5. THE APPLICATION BLANK for employment should contain definite questions relating to the applicant's residence in the United States, his literacy in the English and his native language and his citizenship status.

6. PROMOTIONS. The reverse side of the "Employee's Record" card should be used for recording efficiency and producing ratings, regularity, etc., which should serve as the basis of promotions. A policy of promotions from within the plant, properly announced, thoroughly understood and consistently adhered to will do much to increase efficiency.

7. DISMISSALS. Records should show number of men discharged and those who quit voluntarily and the reasons therefor. There should be a definite rule that all firing should be done through the employment department and all persons leaving the company's employ should be carefully interviewed. Causes of dissatisfaction can thus be determined and adjustments or transfers to other departments in the plant can be made.

8. A NURSE should be employed, speaking foreign languages, to follow up cases of absence, remove the causes and develop an American standard of living in the home.

9. SAFETY-FIRST WORK. Until all employees learn to read English some of the safety rules should be printed in the important foreign languages and posted.

10. INSURANCE. Special efforts should be made to gain the understanding and interest of the foreign-born employees in the plant association which will bring them into social contact with the American employees—a very strong factor in Americanization. Lunch, reading and rest rooms should be provided, which will further mix the workmen, and raise their working efficiency through relaxation.

11. SAVINGS. Greater thrift means higher standards of living, and a more efficient and stable labor supply. Local banks may be induced to send a teller to the plant every pay day and officially accept deposits there.

12. A COMMON LANGUAGE. If a definite cooperative arrangement cannot be made between the plant and the public schools to stimulate attendance—similar to the Detroit plan—another and perhaps better method is the establishment of classes in the plant before or after shifts, and before the men are scattered to their homes. (Standards and methods for this work can be secured from the Division of Immigrant Education of the United States Bureau of Education).

13. A UNITED CITIZENSHIP. All those desirous of becoming citizens should be enrolled in special classes and receive instruction in the principles of the American form of government.

14. HOUSING. It is well to keep careful records of employees' housing and living conditions. Bad home conditions tend to increase the labor turnover by stimulating search for work in other communities. The stability of the labor supply is largely dependent on the creation of a home-stake in the community.

15. COORDINATION OF PLANT ACTIVITIES WITH CITY-WIDE AMERICANIZATION WORK. A conference of the industrial leaders in each locality should be called at which the conditions, principles and methods of Americanization work for the community and the industrial plants can be outlined. One plant is so dependent on another, with respect to labor supply, that every effort should be made to coordinate city-wide work to promote the loyalty and stability of the alien workmen in the national crisis the country is facing.

ACCORDING TO "THE TIRE RATE BOOK" THERE ARE IN THE United States 40,912 firms of whom tires can be bought at retail. These are divided as follows: 25,924 dealers; 23,686 garages; 12,471 machine shops; 5,675 firms having auto-supply departments, and 2,503 supply stores. Many firms, of course, are listed in two of these classifications.

The Rubber Association of America.

MECHANICAL RUBBER GOODS MANUFACTURING DIVISION MEETING.

AN important meeting of the Mechanical Rubber Goods Manufacturing Division of the Rubber Association was held August 15 at 17 Battery place, New York City. There were present 25 members representing 22 manufacturers. The following communications from the Committee on Cotton Goods of the Council of National Defense were read:

The unusual requirements for tentage and other heavy duck has necessitated the utilization of looms not ordinarily employed on these fabrics to the extent that much of commercial business has of necessity been curtailed and many looms adapted to hose ducks have been put on numbered ducks and tent ducks. Knowing the vital necessity of railroad supplies, particularly of air brake hose, steam and signal hose, which is essential to the proper maintenance of the railroad equipment, it was realized that unless accurate figures were secured of the supplies now available of these several fabrics, and the quantity likely to be required during the next year, it might be possible that by employing machinery usually engaged on these fabrics on other work, it would not be available to supply the demand when needed.

We have, therefore, to request that you furnish us with as nearly accurate figures as is possible of the present visible supply of air brake, steam and signal hose ducks in the possession of the various rubber manufacturers as well as the stock of these made up articles in the possession of the various supply houses, that we may report to the Council of National Defense at Washington the available supply, as well as the probable requirements for the next year, in order that proper provision may be made with the cotton goods manufacturers for taking care of these requirements.

We acknowledge receipt of your favor of August 2 which was taken up and discussed at the Committee meeting of yesterday. The sense of the Committee was that it would be ill advised to send our inquiries direct to the trade in general. Have to advise that you secure by best means possible through your Committee the information desired on steam, air brake and signal hose ducks. We would also request that you ascertain as soon as possible the quantities of stocks of 30 and 32 ounce belting duck in 42 and 50-inch widths.

A general discussion of the duck situation followed, and every member present gave his views on the question. From the remarks it was evident that a number of firms represented had orders and contracts for manufactured goods running well into next year, and in some instances they had contracted for a supply of cotton duck, yarn, etc., to meet their requirements. There seemed to be a general feeling, however, that the requirements of the government would make it impossible for the cotton manufacturers to deliver to the rubber trade all the materials called for.

The question of preparing figures showing the amount of unfinished and finished stock on hand and an estimate of the amount of cotton goods necessary to meet the demands for the coming year was also thoroughly considered at the meeting and it seemed to be the general opinion of those present that before this was done the members of the Division should have a clearer understanding of the cotton fabric situation and more definite information as to the possible requirements of the government under the present unusual conditions. All expressed their perfect willingness, however, to give the Committee or representatives of the government any information they might desire including the amount of stock on hand, etc., if called upon to do so.

From the discussion it was evident that there was a general feeling that a Committee to represent the members of the Division should be named to investigate the present situation and secure all data possible, as to present and possible future conditions, for the information of the members of the Division so that intelligent action could be taken.

The Chairman suggested that the proposed committee be made a permanent committee to handle matters of this kind and stated that it was his opinion the cotton situation was at all times of sufficient importance to require a special committee to treat with any situation which might arise.

It was unanimously voted to appoint a committee of seven to confer with the cotton duck, yarn and other manufacturers of cotton fabrics and to investigate the entire situation, seeking any necessary information at Washington, and reporting its findings

to the members of the Division as promptly and fully as possible.

The Chairman appointed Messrs. Cobb and Bailey as a committee to submit a list of nominations for the proposed committee. The following firm members were nominated and unanimously elected, their representatives to be designated by the companies named: Rubber Goods Manufacturing Co., The Goodyear Tire & Rubber Co., The B. F. Goodrich Co., Fabric Fire Hose Co., Boston Woven Hose & Rubber Co., United & Globe Rubber Manufacturing Cos., Republic Rubber Co.

During the discussion, Mr. Beynon, of the Dunlop Tire & Rubber Goods Co., Limited, stated that he was particularly interested in whatever action was taken by the Division, and also what the attitude of the U. S. Government might be in the matter, as he thought it very likely that the Canadian Government would take action along the same lines.

Mr. Voorhees stated that at least 20 per cent of the available looms for cotton goods had been taken over for government work exclusively and that this percentage would undoubtedly be increased to fully 50 per cent within a year.

By special invitation, J. Spencer Turner, chairman, and C. S. Green, secretary, of the Committee on Cotton Goods of the Council of National Defense, were present to explain the difficulties encountered by the cotton goods people.

Mr. Turner stated that he thought if the manufacturers of rubber goods could obtain from the government some definite expression as to its requirements for the coming year, it would facilitate the solution of the present day problem. On the other hand, it should be brought to the attention of the government that there were certain lines of goods, such as air brake hose, steam hose, etc., which were being delivered to the railroads and were of such vital necessity as to be classed as war material.

Mr. Turner also referred to the fact that while the manufacturers throughout the country must make every effort to meet the government demands, at the same time their regular domestic trade should receive some consideration and it would seem that a thorough understanding of the interests of all parties concerned should be given just and fair consideration.

In response to a question Mr. Turner assured those present that a large percentage of the facilities of duck manufacturers throughout the country had of necessity been given up to government work and he seemed to think that cooperation on the part of the manufacturers of rubber goods with the duck manufacturers was the best solution of present difficulties. He stated he was sure the cotton duck people would be very willing to confer with representatives of the rubber goods trade at all times to adjust the distribution of cotton goods as much as possible.

A committee of three was appointed to suggest topics to be brought up and discussed at the monthly meetings. This committee consists of the following: A. Boyd Cornell (chairman), J. J. Voorhees, Sr., George A. Wies.

ANOTHER RUBBER SMUGGLING PLOT DISCOVERED.

Charged with smuggling rubber medical goods and platinum into Germany by way of Holland and Belgium, nine men, said to be citizens of Belgium, six of them reported to be firemen on a Belgian relief ship chartered to convey relief supplies from the United States to their destitute countrymen, were arrested in New York City August 10, culminating a long investigation of the methods by which Germany has been able to get much needed supplies from America.

Agents connected with the Department of Justice believe that merchandise valued in this country at from \$25,000 to \$30,000 has been smuggled weekly from Atlantic ports. The value of these articles is said to be fivefold in Germany.

According to the police, the six men were walking rubber shops. Under their clothing, the detectives assert, they found soft rubber medical articles, wrapped layer upon layer, about their bodies, giving them a puffed-up appearance. One man carried more than 100 bathing caps between his skin and underwear.

The six men gave the police much information regarding the underground smuggling system and several German agents from whom these men obtained goods are also under arrest.

Jelutong, or Pontianak, Is Crude Rubber and Duty Free.

A CASE of much importance to importers and users of Jelutong, or Pontianak, rubber was recently decided by the United States General Appraisers. This rubber had always been admitted free of duty until June, 1916, when the government suddenly assessed an import duty of 10 per cent on it as a non-enumerated, unmanufactured article under the provisions of paragraph 385 of the tariff act of 1913. L. Littlejohn & Co., Inc., New York City, importer and dealer in crude rubber, protested, claiming that Jelutong was a crude rubber, and as such entitled to free entry under paragraph 513. The decision recently handed down sustains this protest.

The case was tried on February 19, 20 and 21. The attorneys for the importers were Thaddeus S. and Edward P. Sharretts, the government being represented by Assistant U. S. Attorney-General Hanson, with Robert Hardison as special counsel. Frederick J. Maywald, the chemical expert, collaborated with the attorneys in preparing the case, and some of the government officials, as well as others interested in the case, declared that it was one of the best presented and most completely prepared cases which had ever been brought in the Customs Court. A large number of witnesses, technical experts and manufacturers, were called on the importers' side, and a great many exhibits were introduced in evidence.

The testimony on behalf of the importers covered three distinct lines, *viz.*, first, the trade meaning of the term "india rubber" as used in the Tariff Act; second, the trade classification of Jelutong, or Pontianak, by importers and rubber manufacturers; third, the chemical and botanical identity of Jelutong as a rubber.

John T. Callahan, president of the Archer Rubber Co., testified that there was no difference between rubber and india rubber, which refers to all the various types and grades of crude rubber among which is Jelutong. He stated that his company bought Pontianak, or Jelutong, as a crude rubber and used it as such; that Jelutong was one of the various rubbers used in its compounds, and that it was necessary to mix various rubbers in order to obtain certain desired results. He said further that his company never used Pontianak, or Jelutong, except as a crude rubber, and knew of no other use for it; that it was never used as a filler.

William E. Bruyn, treasurer of L. Littlejohn & Co., Inc., testified that his company bought and sold Jelutong purely as a crude rubber, and that throughout his business experience of fifteen years he had never purchased it, or knew of its being regarded as other than a crude rubber. Similar statements were made by Francis R. Henderson, of Henderson & Korn; Thomas A. Desmond, of Robinson & Co., and G. A. Luddington, purchasing agent of the Fisk and Federal rubber companies and formerly an importer and dealer in crude rubber.

Robert C. Hartong, chief compounding chemist of The Good-year Tire & Rubber Co., said that Jelutong was used solely as a rubber and as a necessary component of some of the compounds prepared by his company. He illustrated this with samples, the compounds being the same except that in one case Jelutong was used in the mixture, while in the other case no Jelutong was used. His testimony clearly established the fact that Jelutong had definite qualities as a rubber, and that those qualities in a rubber compound could be obtained only by the use of Jelutong or a similar rubber.

Ralph B. Naylor, chief compounding chemist of The Fisk Rubber Co., Chicopee Falls, Massachusetts, and James J. Clifford, superintendent of manufacture of the Boston Woven Hose & Rubber Co., Cambridge, Massachusetts, also referred to the necessity of using Pontianak, or Jelutong, as one of the rub-

ber components of many different kinds of rubber compounds, and said that they never used it for any other purpose than as a rubber. Mr. Clifford also showed samples, using other lines of goods than those produced by Mr. Hartong, the combined exhibits including automobile tires, garden hose, rubber shoes, etc.

William G. Hopkins, purchasing agent of the Boston Woven Hose & Rubber Co., stated that since 1905, when he became purchasing agent, he had always bought Jelutong as a crude rubber and had always regarded it as such. He said further that it was carried in the inventories and stock sheets of his company with the other crude rubbers used.

Julian A. Whitcomb was called as a botanist and expert in the growing and preparation of crude rubbers. He illustrated his testimony with sections of an *Hevea* tree and a Jelutong tree. These trees, together with latices of trees of each of these kinds, were imported from the East by L. Littlejohn & Co., Inc. Mr. Whitcomb readily identified both trees, and proved by illustrations of the appearance of the bark and wood, and in other ways, that the trees were what they were stated to be. He introduced samples of rubber which he had prepared by coagulation of the latices from the two different trees, and explained how these rubbers were prepared and how they could be identified by their appearance. He further explained the method of tapping and preparing Jelutong, *Hevea*, *Caucho*, *Landolphia* and other rubbers in their native places, as he had explored and traveled extensively in the Far East, in Africa, Mexico, Central and South America, and also explained the various kinds of Jelutong trees, describing the differences between them, their habitats, their growth, and the method of preparation of the rubber from the latices. Pontianak, he explained, is another term for Jelutong, the name under which the commodity in question had been invoiced; that the word "Jelutong" is derived from the plant from which this rubber comes, and that the word "Pontianak" is the name of a town and district in Borneo from which it is procured, an identical product being imported from British North Borneo and Sumatra. Roger S. Hardy, another expert, corroborated this testimony.

Frederick J. Maywald then testified as to the chemical identity of Jelutong and other rubbers, stating that rubber is the only material that has both plasticity and elasticity and that Jelutong combines both qualities. He explained the method of compounding and curing rubbers, described the differences between various rubbers as to physical qualities, curing time and other characteristics, and told of the qualities imparted by various rubbers to certain compounds. He said that he had an experimental plant and had made a large number of samples of various kinds. Many of these samples were introduced in evidence. He showed samples of both wild and plantation rubber from practically every well-known rubber family. He showed samples compounded with these various rubbers, and explained the various times of cure and proportions of sulphur necessary to bring about the same cure with different rubbers, clearly showing that hardly any two rubbers were identical in their characteristics. He also testified as to Jelutong being regarded, both in the trade and in the literature, as a crude rubber, and mentioned particularly Circular 38 of the Bureau of Standards, Department of Commerce, in which Jelutong is classified as one of a number of rubbers. The witness introduced samples of crude washed and dried rubbers, and some rubbers which had been deresinated, thus showing that the basic component in each case was caoutchouc or rubber gum, and that all were substantially identical. He said further that all

rubbers contain resin, and that the resin content varies, not only as between different families, but also in the same family, when obtained from different sources. He explained the chemistry of the vulcanization of rubber, so far as it is understood at the present time.

The government then called Mr. Montgomery, examiner of chemicals and drugs in the Appraiser's Office, who testified as to the custom in examining Jelutong, and stated that it was his belief that it has been returned as a crude drug. William H. Quinton testified along similar lines for the government, and introduced in evidence invoices of importations of various rubbers, including Jelutong.

H. L. Brown stated on behalf of the government that he was using about 25 tons of Jelutong a year in the manufacture of chewing gum. On cross-examination, however, he admitted that he did not use Jelutong as such, but extracted the resins and used them in chewing gum, selling the remaining rubber to rubber manufacturers. He said further, on cross-examination, that it was not possible to use the untreated Jelutong in chewing gum.

The case was then closed, and both attorneys were ordered to file briefs. The opinion, delivered by General Appraiser Hay for the Board, reviews the testimony as already set forth and concludes:

The above statement of fact would seem to conclusively decide the question at issue.

There is no doubt from this testimony but that the commodity is known throughout the trade of the United States as crude rubber, and, that india rubber and crude rubber are the same thing. Nor is there any doubt from this testimony but that it is used for the same purpose as other kinds of rubber and has the same qualities, the difference being only one of degree. In our judgment the testimony clearly brings Jelutong within the purview of paragraph 513. This conclusion we think is in line with the dictionary meaning of the word, the encyclopedic authorities and such technical authorities as treat of the subject.

The protest is therefore sustained and the collector will re-liquidate the entry accordingly.

BOARD OF U. S. GENERAL APPRAISERS.

Entry 197,286 returned herewith.

JUDICIAL DECISIONS.

RACINE RUBBER CO. v. INDUSTRIAL COMMISSION, Supreme Court of Wisconsin, May 15, 1917. An employee of the rubber company was seated in a room in the factory at the noon hour eating his lunch, in accordance with a long-existing custom known by and tacitly consented to by his employer, when a large piece of rubber unexpectedly fell on him and broke his leg. He was awarded compensation by the Industrial Commission, and the employer appealed. The Court decided that he had been, at the time of the accident, engaged in service growing out of or incidental to his employment within the meaning of the Workmen's Compensation Act. The award was therefore affirmed, with costs, to the employee. [Northeastern Reporter, Vol. 162, page 664.]

INNER SHOE TIRE CO. v. KNAPP-BROWN CO., Supreme Court of South Dakota, June 26, 1917. The Inner Shoe Tire Co., manufacturer of a lining for tire casings, made an oral contract with the Knapp-Brown people to vulcanize their product into the casings. The manufacturer supplied order blanks and made a shipment on an order written on one of them. They claim that this was an outright sale, while the vulcanizers claim that they acted merely as agents and the goods were shipped on consignment in accordance with the verbal contract and that they were returnable if they were not needed. A judgment in favor of the Knapp-Brown people in the Municipal Court of Sioux City was affirmed by the Supreme Court. [Northwestern Reporter, Vol. 163, page 572.]

THERMOID RUBBER CO. v. BRICTON, Supreme Court of South Dakota, June 26, 1917. The Briction Manufacturing Co. is the

manufacturer of a rubber tread intended to protect tires and prevent skidding. This company bought of the Thermo Rubber Co. tires and tubes which were to be used in conjunction with its product. These were guaranteed to be the equal of any on the market, but when they were delivered and sold they proved defective. Because they were faulty many of the customers refused to pay for either the tires or the treads. As the treads were extensively advertised the company sustained a great loss and brought suit to recover \$25,000 damages. It was decided that because the Thermo Rubber company could sue the purchasers for the value of the tires, they did not suffer so great a loss. This judgment was affirmed in the Supreme Court. [Northwestern Reporter, Vol. 163, page 567.]

THE B. F. GOODRICH CO. v. SEWELL CUSHION WHEEL CO., Supreme court of Michigan, May 31, 1917. The B. F. Goodrich Co. and its predecessor, the Diamond Rubber Co., for a number of years, manufactured for the Sewell company, rubber cushions used by them in a patented wheel for automobile trucks. The cushions are made of the best grade rubber that could be procured and sold on a five-year guarantee. In October, 1913, an order was placed for some of these cushions, and shipments made to the amount of 979 pounds. It is conceded that the rubber was under-cured and some 800 pounds returned to the factory to be re-cured. The Goodrich people submitted a sample of a part of the rubber which they had re-cured which was satisfactory. When the bulk of the re-cured rubber was returned it was found to be of a poorer quality than that which the Sewell people were used to getting and they could not use it because of the five-year guarantee. They therefore notified the sellers that the goods were held subject to their order. Fruitless negotiations followed and suit was brought in the Circuit Court, where a judgment in favor of the buyer was given and this was upheld by the Supreme Court, with costs to the Sewell company. [Northwestern Reporter, Vol. 163, page 5.]

THE GOODYEAR TIRE & RUBBER CO. v. E. W. WARD AND OTHERS, St. Louis Court of Appeals, May 8, 1917. The Goodyear company sold a bill of goods consisting of tires and tubes to the "New York Motor Car Co." which, it alleges, is composed of E. W. Ward, Oscar J. Mueller and Adolph Grohe. When the case was first tried before a justice of the peace, he decided that there was no cause for action against Mueller. In the Court of Appeals evidence was introduced which showed that Mueller had signed a contract for the sale of automobiles with the Elmore Manufacturing Co. and had shared the profits on sales made under the agreement with the other members of the firm. He, however, did not share in the profits of the repair department, which was run in the name of the firm, but he used part of the goods sold to pay the rent of the firm's office. It was therefore decided that he was responsible for the debt with the others and the case was remanded for further trial. [Southwestern Reporter, Vol. 195, page 75.]

DOOLITTLE v. SAVAGE TIRE CO., District Court of Appeals, Second District of California, April 19, 1917. M. G. Doolittle was employed by the tire company as a salesman and made an agreement with the sales manager to use his automobile in connection with his work, for which use he was to receive a reasonable compensation. He used the machine from the beginning of August, 1913, until the end of August, 1914. In March, 1914, a new arrangement was made whereby the company supplied the gasoline. Evidence showed that the value of the use of the automobile was \$100 per month if he supplied the fuel and \$75 a month while it was supplied to him. Thus the total value of the use of the machine figured about \$1,000. Suit was brought in the Superior Court and judgment found for that sum. The company appealed but the judgment was affirmed. [Pacific Reporter, Vol. 165, Page 728.]

MILLER v. HARVEY, Court of Appeals of New York, May 22, 1917. The general rule which concedes the delivery of goods, in

this case automobile tires, to a common carrier as a delivery to the buyer, has an exception where the goods which were bought and paid for, were delivered to the express company and the seller neglected to state their value, \$95.43, which neglect limited the liability of the express company to but \$50. The tires were lost in transit and the buyer requested a second shipment which was made. A suit was brought by the seller for the value of the delivered goods. It was decided that the buyer was entitled to the second shipment. The seller appealed but the judgment was affirmed. [Northeastern Reporter, Vol. 116, page 781.]

In *re GIBNEY TIRE & RUBBER CO.*, United States District Court, Eastern District of Pennsylvania, May 7, 1917. In an involuntary proceeding in bankruptcy based on the bankrupt's admission in writing of its inability to pay its debts and its willingness to be adjudged a bankrupt, an adjudication was made within five days after the return day of the subpoena, which are allowed under the provision of the Bankruptcy Act, and creditors, who had not then intervened, subsequently filed a petition to vacate the judgment and permit them to defend, alleging only the solvency of the bankrupt. It was held that, while such solvency would not prevent a judgment on the ground upon which the proceeding was based, this was not a sufficient reason for refusing to vacate it, as creditors seeking the vacation of a judgment prematurely entered are not required to show facts constituting a good answer to the bankruptcy petition, and their allegation as to solvency was not intended to serve as an answer, but to show a substantial right on their part to intervene. [Federal Reporter, Vol. 241, page 879.]

RUBBER TRADING CO. v. MANHATTAN RUBBER MANUFACTURING CO., Court of Appeals of New York, June 5, 1917. The Manhattan Rubber Manufacturing Co. agreed to buy 15 tons of prime thin Manicoba rubber at \$1 a pound, delivery to be made about five tons a month in September, October and November, 1912, and billed on a credit of ten days. The first delivery made under this contract was made in August and paid for in September without previous inspection. Defects were found and 7,900 pounds were returned with the consent of the importers. When the second shipment arrived in October, the buyers were notified and asked to examine the rubber while on the dock or in the warehouse, and they refused to accept the rubber until it could be put through a test at their factory. The Trading company refused to issue delivery orders until they received the acceptance. The other shipment arrived in November and neither party would recede from its position. Each party notified the other that the contract had been broken. Part of the rubber was sold at a reduced price and the rest was retained. Action was brought to recover the profit which had been lost. Judgment was found in favor of the sellers, and upheld by the Appellate Division of the Supreme Court, but when taken to the Court of Appeals it was reversed and a new trial granted, with costs to abide the result. [Northeastern Reporter, Vol. 116, page 789.]

MASTER TO EVALUATE MUNGER RIM PATENT.

In an unusually detailed interlocutory decree, Judge Manton has appointed James J. Kennedy, of New York City, as master to go over the books of the Perlman Rim Corporation and determine how much Louis DeF. Munger should receive in back royalties on his patent as a result of winning his recent infringement suit. The decree contains the specific instruction that the master is to "consider the nature of the invention, its utility and the advantages to be gained from its use" as a basis for determining the rate of royalty. The task of evaluating the patent itself is best measured by the fact that the whole industry has not yet been able to do so. It is one that will probably take many months to accomplish, and further delay will be occasioned by the fact that all is contingent upon the recent decision being upheld on appeal.

TRADE-MARK DECISIONS.

COLOR NOT REGISTRABLE AS A TRADE-MARK.

DECISIONS of the Commissioner of Patents regarding the registration of trade-marks of rubber goods of special interest to manufacturers, are to the effect that color of the goods is not sufficiently distinctive to be allowed as a trade-mark. In the case of *The B. F. Goodrich Co. v. Firestone Tire & Rubber Co.*, 123 Ms. Dec. 60, May 22, 1917, opposition was filed to the registration of a mark for tires, consisting of a circumferential band of black, between two circumferential red bands. Opposer used a black tread for its tire, with side walls of gray. The commissioner decided that it makes no difference whether the marking was for purposes of ornamentation, or as a trade-mark. The color scheme is not distinctive enough for a trade-mark and cannot, therefore, be monopolized.

In an opposition filed against the preceding mark—*Lee Tire & Rubber Co. v. Firestone Tire & Rubber Co.*, 123 Ms. Dec. 62, May 22, 1917—opposer claimed it first used red sides with a gray tread for tires. The making of sides and tread of different color is functional, because the parties agree that different rubber should be used in the different places, as they are of different color. The opposition is sustained.

In an opposition to the registration of the same mark—*Good-year Tire & Rubber Co. v. Firestone Tire & Rubber Co.*, 123 Ms. Dec. 63, May 22, 1917—opposer claimed he used a central circumferential band of blue. There is no valid trade-mark in coloring an automobile tire to be one color on the sides and another on the tread, regardless of what the colors are. It is not only not distinctive, but the making of sides and tread of different color is functional. There is no trade-mark in a device that depends on color to distinguish it. This case is distinguished from cases where a design is distinctive apart from the color. Color is not definitive in any case; there are innumerable shades of any color. The proposed registration would give a group of applicants a monopoly of the natural and practical designs for ornamenting a tire to distinguish it from other tires. Distinctiveness of a mark must rest in something not equally open to use by others.

An opposition to application to register a black and red combination of color for tires—*Firestone Tire & Rubber Co. v. Goodrich Co.*, 123 Ms. Dec. 68, May 22, 1917—was dismissed, on the ground of prior use of gray and black colors by the applicant. However, the mark is not properly registrable and should be rejected.

An opposition filed to the foregoing mark on the ground of prior use of a black tread and red sides by opposer—*Miller Rubber Co. v. Firestone Tire & Rubber Co.*, 123 Ms. Dec. 66, May 22, 1917—was sustained, for the reasons given in the preceding decision.

The case of *L. Candee & Co. v. Hood Rubber Co.*, 123 Ms., Dec. 78, is a petition to cancel a trade-mark applied to rubber boots and shoes, consisting of a gray band encircling the top of the articles. Petitioner having shown prior use, it is immaterial whether the mark was structural or for ornament, or as a trade-mark for the particular goods. Whatever significance the band had in one case, it has in the other. If functional with the petitioner, it is so for applicant, and the mark is therefore not registrable. Color is not distinctive, in any case, and such a mark is fundamentally improper. The mark is, therefore, properly cancelled.

A STRIKING COMPARISON APPEARS IN A REPORT OF THE COMMISSIONER OF PATENTS, in a recent decision considering the application of a trade-mark for rubber goods. He says, "There is no such thing as a general trade-mark, any more than there could be such a thing as one twin."—Well, that isn't an impossibility. Perhaps you know somebody who is one twin. We do. His brother is dead.

What the Rubber Chemists Are Doing.

THE PREPARATION OF RAW RUBBER.

THE preparation of raw rubber with special reference to "Slab" rubber and variability is discussed by B. J. Eaton in the Agricultural Bulletin of the Federated Malay States (February and March, 1917). The following questions have been raised in connection with what has been termed by Eaton "Slab" rubber; that is, unpressed, or lightly pressed or rolled coagulum.

1. Does the preparation of this type of rubber lead to greater variability or uniformity? Is it a solution of the problem of uniformity?

In the opinion of the author the preparation of this type of rubber will tend toward greater uniformity than exists at present. Putting aside the preparation of pale crêpe, which may be considered from the point of view of its uses a special preparation, it is proposed to substitute "slab" rubber for sheet, so that variability has to be considered, principally as between slab and sheet. It has been shown that the cause of variability in rate of cure is due chiefly to biological agencies, acting on the protein constituents of the rubber, producing substances of the nature of amines or amino acids which act as vulcanization accelerators, and that numerous variable factors in methods of preparation affect the amount of such accelerators which are formed. It is obvious that the more variable factors the greater the variability of the product. The author holds that greater variability is introduced in sheet than in "slab" rubber, which undergoes the minimum of handling. One of the greatest factors responsible for variability in rate of cure of sheet rubber is the rate of drying, including smoking, and, secondly, the concentration of the latex and the amount of rolling.

Since the primary cause of variability in rate of cure is biological, it may be thought that considerable variability would be caused by an uncontrolled fermentation or decomposition, such as occurs in coagulum. It should be remembered that in this country (Malaysia) the shade temperature is very constant during the day and this constancy, in the author's opinion, is responsible for the remarkable uniformity of the change which takes place in unrolled coagulum left to mature for six days, together with the fact that the latex during collection is thoroughly exposed to numerous chance organisms which enter it. This remarkable uniformity of "slab" rubber has been proved by the writer, not only in all his experimental samples, which include many hundreds, but also in samples prepared on different estates in various parts of the country.

2. Is slab rubber, apart from the advantage to manufacturers of its rapidity of cure, of better quality than other first-grade types?

All our experiments have shown that the tensile properties of "slab" rubber are from 20 to 25 per cent better than those of crêpe rubbers and generally superior to sheet rubber, and since sheet is superior to crêpe in general, it may almost certainly be argued that the keeping properties of vulcanized "slab" rubber will also be superior. The superior tensile properties of "slab" rubber may be either an inherent quality of the raw rubber, or due to the much shorter time of vulcanization required for its optimum cure and maximum tensile properties.

There are thus two advantages in favor of "slab" rubber—rapidity of cure and superior tensile properties.

3. Will ultimate manufacturing difficulties be likely to be greater than those which exist with present types of first latex plantation rubber?

There is absolutely no reason why the preparation of "slab" rubber should cause greater confusion or difficulty for the manufacturer than is caused by the variability in rate of cure which exists at present in the case of sheet and crêpe rubbers.

In demonstration the author cites the fact that a large American concern on its Malaysian plantation prepares "slab" rubber for use in its own factories in America.

4. In what form should slab rubber be shipped, having in view the extra freight on wet rubber?

There are only three forms in which "slab" rubber can be placed on the market, as follows: (a) Virgin slab containing about 20 per cent of moisture, (b) as dry crêpe, (c) as block.

The first form necessitates payment of freight on water to practically the same extent as in the case of Fine Hard Para, which does not appear to cause any difficulties on the market.

The advantage of converting slab to crêpe on the estate is that freight on moisture is eliminated. It is doubtful whether the advantage in favor of marketing this type of rubber in the form of crêpe is sufficient to neutralize the disadvantage of shipping virgin "slab."

The third form in which this type of rubber can be marketed is dry block made from artificially dried crêpe. At the present stage no definite statement can be made as to which of the three forms will eventually prove the most satisfactory, although in the author's opinion, shipping in the form of virgin "slab" or dried block is preferable to conversion to crêpe on the estate and shipping as crêpe.

The company referred to as shipping "slab" rubbers from its estates packs it in bags only.

The author expresses his opinion that the "slab" type of plantation rubber is of considerably greater value than the types of plantation Para rubber at present on the market and also is superior to Fine Hard Para.

GLYCERIN SUBSTITUTES.

An efficient glycerol substitute by J. Lennox is reported as follows in "Chemical Abstracts." The formula yields a product which has body, a sweetish taste and is reasonably permanent. Irish moss (washed) 0.5 ounce; water, 24 fluid ounces. Keep at boiling temperature in a covered vessel for 15 minutes, strain the mixture with pressure, pour upon the muslin boiling water, make up to 19 fluid ounces; then add glucose one ounce, mix and strain through double ply without pressing.

The drug trade is using a sugar syrup as a substitute for glycerin. Its composition is invert sugar 46.8 per cent, sucrose 29.35 per cent, ash 0.05 per cent, water 23.8 per cent. This material would probably be found valueless in connection with rubber work where glycerin is employed.

SUBSTITUTE FOR RUBBER.

Sterilin is suggested as a substitute for rubber finger cots for medical examinations. It fits the finger well, does not affect the touch, is washable with soap, and can be disinfected with lysol and corrosive sublimate. It cannot be sterilized in steam. [A. Pinkus, Berlin, through "Chemical Abstracts."]

ANTIMONY AS TRISULPHIDE.

The following method for the determination of antimony as trisulphide, by C. A. Clark, is based on the fact that antimony trisulphide can be converted into the black crystalline modification by passing hydrogen sulphide into the hot liquid containing a large excess of hydrochloric acid. In practice the solution of the antimony salt is heated with 24 to 100 cc. hydrochloric acid on a water bath, and frequently shaken while a current of hydrogen sulphide is passed through it. The conversion of the sulphide into the black form will be completed after 30 to 35 minutes. The precipitate is collected in a Gooch crucible, washed with water and alcohol, and dried at 270 to 280 degrees C. in a current of carbon dioxide.

The sulphide is convertible into pentoxide by ignition with a weighed quantity of ferric oxide and ferric nitrate.

CHEMICAL PATENTS.

THE UNITED STATES.

RUBBER COMPOSITION. A flexible rubber composition is made by disintegrating vulcanized fibrous rubber waste, mineral oil or other oily matter which prevents too fine reduction of the fibers. The disintegrated mass is mixed with sulphur and then subjected to heat and pressure to revulcanize the rubber. [F. T. Lahey, United States patent No. 1,233,252.]

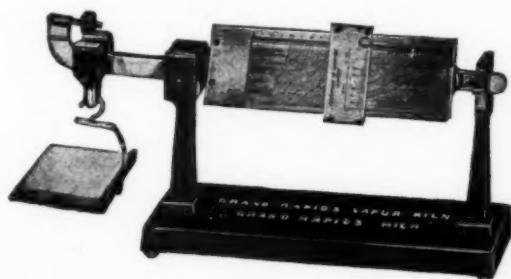
THE UNITED KINGDOM.

RUBBER SUBSTITUTES. A substitute for rubber is made from a mixture of 24 parts gelatine or glue, 28 parts glycerol, glucose or molasses, 10 parts water, 8 parts each rubber, zinc oxide, and diatomaceous earth or whiting, 5 parts of sulphur, 3.5 parts calcined magnesia, 2.5 parts litharge, 2 parts formaldehyde, potassium bichromate, tannin or like toughening agent, and 1 part coloring matter. Calamine, Pontianak, asphaltum, coal tar or pitch, or like softening agent may be employed as substitutes for the gelatine or glycerol. The mixture is subsequently molded and vulcanized. It may be used as an inner core for tires, for electric insulation, tilings, roofing, etc. [J. Flint, British Patent No. 105,912.]

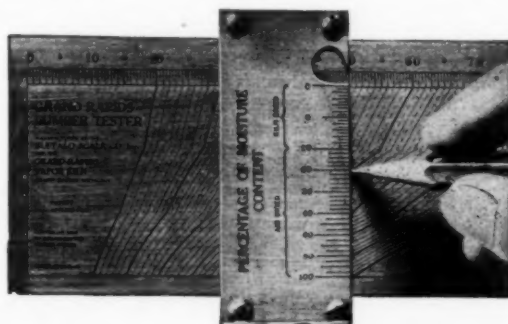
LABORATORY APPARATUS.

MOISTURE TESTER.

THE accompanying illustrations show an instrument in the form of a weighing scale for the determination of moisture in dried material. The instrument was designed for use in connection with the kiln drying of lumber, but is equally well adapted for any material the moisture content of which is desired. The instrument is simple and direct, reading requires no figuring. It



is accurately made, graduated to the metric system and can be used for ordinary weighing. To determine the amount of moisture in crude rubber, for example, a specimen is selected



and weighed as received; it is then completely dried by any suitable means, preferably vacuum dried for speed, and weighed again immediately. Following the chart line from first weight

to percentage scale at final weight will give the moisture content. The instrument has already found a place in the rubber industry. It is known as a lumber tester because of its initial adaptation. [Grand Rapids Veneer Works, Grand Rapids, Michigan.]

WATER-STILL.

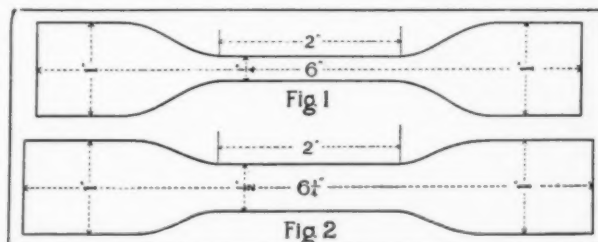


Absolutely pure water in laboratory practice is a necessity that is too well known to warrant comment. The obvious practicability of the apparatus here illustrated will make the following brief description of interest.

The Ralston water still is a simple and convenient piece of apparatus suited for laboratory use. The still is made of copper coated with pure block tin. It can be operated by an ordinary gas burner; size, 14 1/4 inches high and 9 1/4 inches diameter with a capacity of one quart per hour. [John Trageser Steam Copper Works, New York City.]

THE NEED OF STANDARDIZED TEST PIECES.

Standardization is now the order of the day and is particularly important in testing materials of every sort, if the results are to be so correlated as to benefit the entire industry concerned. In the manufacture of rubber goods the tensile strength of the



vulcanized product is commonly determined by stretch or breaking tests, yet the conditions under which these tests are made vary so greatly that exact comparison is virtually impossible and their full value is consequently not obtained. European testing machines as a rule call for rings, while the American specify strips, and unfortunately no uniformity exists with respect to the cross section, length and shape of the latter. Many factories would gladly revise their methods by the adoption of a standard practice were such available, and rubber technicians can do the industry a service in threshing out this matter and making recommendations.

It is the custom of the Bureau of Standards and several manufacturers of rubber goods to cut 1/4-inch test pieces from vulcanized sheet 3/32 inches thick, the specimen having enlarged ends shaped as indicated in Fig. 1, and the elongation in the tension machines being taken between the 2-inch marks shown. Specimens of similar shape 6 1/4 inches long and 1/2 inch wide between the 2-inch marks, as shown in Fig. 2, are also in common use by certain manufacturers. Some firms die their test pieces out of 1/4-inch sheet, some prepare them by molding rather than cutting, and, generally speaking, there is an unfortunate lack of uniformity in shape and dimensions. The length of the straight part varies and the same may be said of the curves and other sections of the pieces, many factories having adopted their own patterns.

It is already conceded that strip tests do not involve certain

errors to which the ring is subject; also that greater uniformity throughout the narrow portion is had by punching away the sides of a flat strip of rubber sheet with a suitable die in a punch press, leaving the test portion between two stout ends for engagement by the grips of the testing machine, than by molding the specimens, careful as must the cutting be done to insure clean edges, as a tear will readily follow a slight check. There seems to be virtual agreement that the rate on tensile tests should be at 20 inches per minute movement of the stretching clamp, but beyond the three foregoing points uniformity ceases.

While the two sizes and shapes already illustrated and dimensioned are more commonly employed than any others, die makers are manufacturing a great variety of dies, mostly for use by mallet on a cutting block, but also plain tops for use under ordinary cutting presses and various forms of tops for insertion in other styles of presses. The straight part in the center of all is either $\frac{1}{4}$ or $\frac{1}{2}$ inch in width, but its length varies, as do also the curves of the grip ends where they reduce to the definite cross section of the sample. Both call for standardization, as Dr. Albert A. Somerville states that these curves have considerable influence on the test.

Here, indeed, is opportunity for scientific research, consultation and recommendation. It would seem that one of the two specimen shapes and sizes shown, together with a specified thickness, might meet the requirements, yet possibly a still better substitute might be evolved.

CHEMICAL ENGINEERS TO MEET IN BOSTON.

CHEMICAL engineers and manufacturers from all over the United States will gather in Boston on September 10, 11, and 12, to participate in the fifty-fifth annual convention of the American Chemical Society. It is estimated that over a thousand will be present for the event, in spite of the fact that many will be compelled to remain at home on account of war orders and the development of war time plans and experiments. It was intended that the convention would occupy the entire second week of September, but it has been determined on account of the serious times and the mobilization of militia during that month, to eliminate such features of the convention as the big banquet and other entertainments, excepting that a typical New England Shore dinner and a smoker will give the desirable touch of good-fellowship to the event.

The meetings will be held in the buildings of the Massachusetts Institute of Technology, Charles River Road, Cambridge.

Registration will be conducted at the buildings of the Massachusetts Institute of Technology, Cambridge, except on Monday, September 10, when it will be held at the Hotel Lenox.

Society headquarters will be at the Hotel Lenox at the corner of Boylston and Exeter streets.

The use of the Engineers' Club, at the corner of Arlington street and Commonwealth avenue, will be extended to all members of the Society.

The program is characterized by simplicity and seriousness, and bears as fully as possible on questions concerning the activities of chemists—both in the government service and in the industries during the war.

GENERAL PROGRAM.

Monday, September 10.

4.00 p. m., Council Meeting. Engineers' Club.

7.00 p. m., Dinner to the Council at the Engineers' Club (tendered by the Northeastern Section).

Tuesday, September 11.

10.00 a. m., General Meeting of the Society in the Massachusetts Institute of Technology.

Address of Welcome:

Dr. R. C. MACLAURIN, President Massachusetts Institute of Technology.

Response:

JULIUS STIEGLITZ, President American Chemical Society.

General Papers.

2.00 p. m., General Conference on Chemistry and Chemistry in Warfare, opened by WILLIAM H. NICHOLS, Chairman Committee on Chemicals, Council of National Defense. MARSTON T. BOGERT, Chairman Chemistry Committee, National Research Council.

5.00 p. m., Harbor trip to Hotel Pemberton, where an informal shore dinner and smoker will be held.

Wednesday, September 12.

Morning, Conferences of Divisions.

Afternoon, Divisional Meetings.

Evening, President's Address, Huntington Hall, Rogers Building, Massachusetts Institute of Technology, Boylston street.

Thursday, September 13.

Morning and Afternoon, Divisional Meetings.

ANNUAL MEETING OF THE RUBBER SECTION.

While the exact date has not been fixed, this meeting will probably be held on either September 12 or 13. The final program for the Rubber Section meeting will probably not be ready until about September 1, but the following tentative program will give some idea of the scope of the meeting:

Reports from the Chairman and Secretary on the work of the Rubber Section.

"A Volumetric Method for the Determination of Free Sulphur," by E. H. Johnson and H. S. Upton.

"The Direct Determination of India Rubber," by John B. Tuttle and Louis Yurow.

Symposiums:

The Best Methods for the Determination of Free and Total Sulphur.

The Use of Accelerators in the Vulcanization of Rubber.

The Rubber Chemist in the National Service.

A number of chemists have already promised to attend the meetings and enter into the discussion of these subjects, among others, L. E. Weber, E. H. Johnson, H. S. Upton, J. B. Tuttle, L. J. Plumb, C. R. Boggs, and D. Spence. Others who have been invited to speak include H. C. Pearson, W. C. Geer, Dorris Whipple, R. S. Postmontier, E. A. Barrier, Frederic Danerth, Earl Davis, Bertrand H. Hale, R. T. Stokes, J. P. Millwood, Donald Cranor and W. H. Cobb. Many of these men will be able to arrange matters so as to be present, and in that event will undoubtedly take part in the discussion. Dr. Spence is chairman of the sub-committee of the National Research Council on Rubber and Allied Products, and we are particularly eager to hear from him just what assistance the rubber chemist can be in the service of our country during the present crisis.

The object of the present announcement is to urge all of the rubber companies to see that matters are so arranged that their chemists will be able to attend this meeting. Everybody appreciates the value of rubber in modern warfare, but the fact remains that while we may have sufficient rubber for our needs, there is still a lot to be done in the way of standardization of supplies and equipment in such a fashion as to make the best possible use of our raw material. It is an assured fact that anything which the rubber chemists can do to be of assistance to the government in this matter will prove to be a valuable service, and one which it is both our duty and privilege to perform.

Last year, more than 100 rubber chemists attended the meeting of the Rubber Section in New York, and they were practically unanimous in expressing their opinion that the meeting was a most profitable one, and well worth attending. There is

no reason why this meeting should not be even better than the last. There is nothing which so tends to quicken our interest and increase our efficiency as meeting with our fellow chemists and exchanging ideas. The fact that every one is so busy is just the reason why we should take this opportunity of getting together and discussing subjects of vital importance to ourselves, our work, and our country.

The secretary has already received some names of those who wish a copy of the final program sent to them when it is issued, but if there are any others who also would like to have a copy it will be well for them to send in their names at once, since pressure of other matters in connection with his government work may render it impossible to comply with such requests if received at the last moment.

John B. Tuttle, Secretary,
Bureau of Standards,
Washington, D. C.
August 18, 1917.

L. E. Weber, Chairman,
729 Boylston street
Boston, Massachusetts.

A MEMORIAL TO JOSEPH PRIESTLEY.

The rubber industry will welcome the plan of the American Chemical Society to raise a fund of \$2,000 for a suitable memorial to Joseph Priestley, the English-American scientist and writer who discovered oxygen and gave caoutchouc the name rubber because it will erase pencil marks. It is proposed to secure a copy of the best available bust portrait to be deposited as a loan in the National Museum, Washington, D. C., and at intervals of a year or more to award Priestly gold medals for superior achievement in chemical research. The matter is in the hands of a notable committee of fifteen, of which F. C. Phillips, University of Pittsburgh, Pittsburgh, Pennsylvania, is chairman. Contributions from \$1 upwards are solicited.

THIRD NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES.

It is the belief of those in charge of the Third Annual National Exposition of Chemical Industries, which will be held at Grand Central Palace, New York City, during the week of September 24, that the affair will be the greatest ever held.

Monday, September 24, at 2 p. m., opening addresses will be made by Dr. Charles H. Herty, chairman of the advisory committee of the exposition and editor of the "Journal of Industrial and Engineering Chemistry;" by Professor Julius Stieglitz, president of the American Chemical Society; Dr. Colin G. Fink, president of the American Electrochemical Society, and Dr. G. W. Thompson, president of the American Institute of Chemical Engineers.

Among the speakers on the program for other days are W. E. Kies, vice-president National City Bank, "The Development of Export Trade with South America"; Professor Marston Taylor Bogart, chairman chemistry committee National Research Council, "The Operation and Work of the National Research Council for the National Weal"; Dr. L. H. Baekeland, of the Naval Consulting Board, "The Future of American Chemical Industry."

In a symposium on "National Resource as Opportunities for Chemical Industries" the speakers will include C. H. Crawford, assistant to president of Nashville, Chattanooga & St. Louis Railway; V. V. Kelsey, chemist-industrial agent Carolina, Clinchfield & Ohio Railway; Dr. E. A. Schubert, mineralogist-geologist Norfolk & Western Railway; Dr. T. P. Maynard, mineralogist-geologist Central of Georgia Railway and Atlantic Coast Line Railway, and Dr. J. H. Watkins, geologist Southern Railway.

The motion picture program will be one of wide interest. The American Cyanamid Co. and General Electric Co. have already arranged to supply their films. The Bureau of Commercial Economics at Washington will also supply many toward completing the range of industrial films.

The purposes of the exposition are not so much to show the progress made in all the chemical industries as to indicate where progress can be made, and where opportunities await development, and how our national resources and wastes can be made valuable and useful. It gives the man of science, the financier, manufacturer and plant operator the opportunity of personal contact with the latest machinery, materials and products used and applied in all the chemical industries, and the opportunity of learning how they can be applied to his specific purposes.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

[320.] Manufacturers of elastic garter webbing are sought.

[321.] A correspondent seeks information on a method for compounding rosin to take the place of shellac.

[322.] An inquiry has been received for a machine for applying labels to cartons.

[323.] A concern that buys uncured friction reclaim is sought.

[324.] Names and addresses of manufacturers of small laboratory centrifuges for latex coagulation have been requested.

[325.] An inquirer desires to secure machinery for making rubber bands.

[326.] A correspondent wishes to be put in touch with a manufacturer of cellulose acetate.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

A mercantile and manufacturing company in Italy desires to purchase imitation leather valises. Report No. 25,019.

A merchant in Newfoundland wishes to purchase rubber protectors, rubber tissue, and other haberdashery used in the tailoring business. Report No. 25,110.

A firm in the United States representing a company in Spain is in the market for rubbers and overshoes. Report No. 25,113.

An agency for the sale of suspenders and garters is sought by a firm in India. Report No. 25,127.

An applicant in Algeria wishes to purchase rubber erasers and bands. Report No. 25,144.

A company in Brazil is in the market for low-cut rubbers for men. Report No. 25,148.

Representation of American manufacturers of all kinds of artificial leather is desired by a merchant in Australia. Report No. 25,187.

A manufacturers' agent in Newfoundland wishes to secure an agency for the sale of fine rubber goods in soft and hard rubber, mechanical rubber goods for railroads, etc. Report No. 25,206.

A firm in British East Africa wishes to buy bicycle tires 28 by 1½ inches, with a straight ribbed tread running with the tire; 4,000 to 5,000 of these tires can be used annually, as well as inner tubes for same. Report No. 25,227.

A firm in Brazil wishes to represent American manufacturers and exporters of rubber goods and textile machinery. Report No. 25,238.

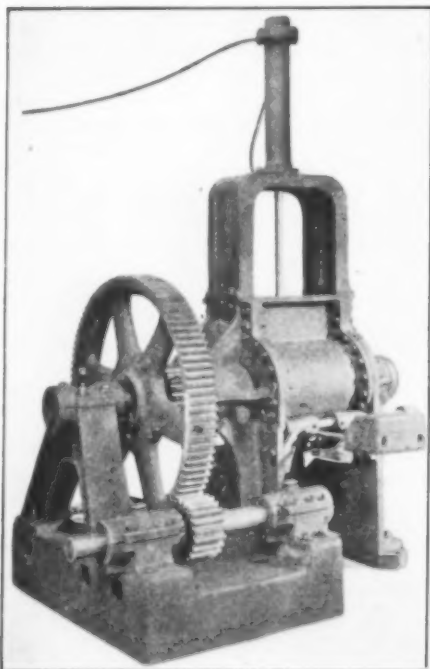
AFRICAN RUBBER AVAILABLE.

A consular officer in British East Africa reports that several concerns in that country are prepared to furnish rubber in specified quantities for shipment to the United States. American concerns interested may secure the names and addresses of such firms from the Bureau of Foreign and Domestic Commerce, or its district or cooperative offices, by referring to file No. 91,462.

New Machines and Appliances.

THE BANBURY AUTOMATIC MIXER.

PROGRESSIVE builders of rubber machinery are constantly studying the rapid advancement of rubber mill practice with the object of developing the necessary machines that will meet



the mechanical requirements of present-day methods. That such inventive effort has been productive in evolving a mixing machine of novel design and proven efficiency is shown in the accompanying illustration.

This machine is adapted to break down the rubber and mix the compounding ingredients at the same time; in fact, it is capable of performing the work usually done on the 48-60 and 84-inch, two-roll mixing mills. It is es-

entially an enclosed machine, comprising two revolving blade shafts that rotate in individual cylindrically-shaped troughs, the bottom of which forms a door through which the finished stock is discharged. The stock is kept under pressure by a weight that is controlled by the vertical shaft and ram located above the feed hopper, thus assuring uniform feeding during the mixing operation. The mixer may be driven by direct gearing from the mill shaft or by individual motor drive, and in some cases chain drive is preferred.

In operation the rubber and compounding ingredients may be dumped into the machine while it is running. However, with some compounds it is preferable first to break down the rubber and then add the ingredients, the subsequent action of the machine being entirely automatic. When the batch is thoroughly mixed, the bottom door is opened and the load is automatically discharged, the mixer being ready for the next batch within a fraction of a minute.

Uniformity of product is the principal advantage claimed for this machine as it will always do an equal amount of work for the same number of revolutions, that is to say, for the same time. It is the machine and not the operator that controls the actual mixing operations. Another advantage due to the enclosed construction of the machine is that of cleanliness when compounds containing lampblack or gasblack are milled. [Birmingham Iron Foundry, Derby, Connecticut.]

SOUTHWARK QUICK OPENING VULCANIZER DOOR.

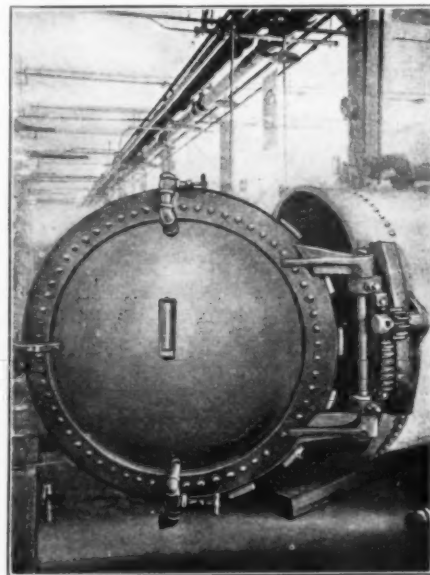
The accompanying illustration shows a new vulcanizer door of the quick opening type that possesses, in connection with unusual facilities for easy handling, the quality of being explo-

sion-proof. In the old type vulcanizer head provided with swinging bolts, should a few of these bolts become loose, as often happens, the other bolts are thrown out by the internal pressure and the door opens violently, causing an explosion. The locking mechanism of the Southwark door, however, is of the breech-lock type and constructed so that when the cover is shifted the taper on the lugs lifts the lid sufficiently to admit air, thus preventing the possibility of an explosion.

The door is opened quickly with very little effort, by means of a rack and pinion mechanism that is operated by one man and shown in the illustration. Connections are provided in the head for attaching temperature and pressure gages.

All castings are made from open hearth steel and the dished part of the door is boiler plate.

Where vulcanizer doors of the swinging bolt type are used, this style of door can easily be installed by making a special locking ring which may be bolted to the existing ring that is riveted to the shell. [Southwark Foundry & Machine Co., Philadelphia, Pennsylvania.]

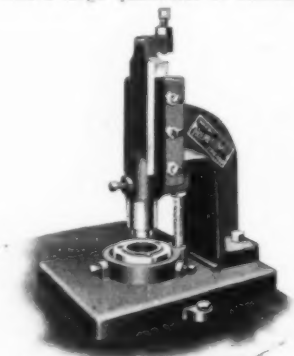


THE HOLMES OVERFLOW TRIMMER.

The labor expense connected with trimming the overflow from mechanical rubber goods is an item of considerable importance where large quantities of standard goods are made. The operation should be quickly and accurately performed and in this respect the trimmer here shown is fully guaranteed by the makers.

The machine is of the foot-power, punch-press type adapted to be mounted on a bench or table. It is especially designed for trimming small mold work, such as fuller balls, disks, bumpers and articles of regular or irregular shapes.

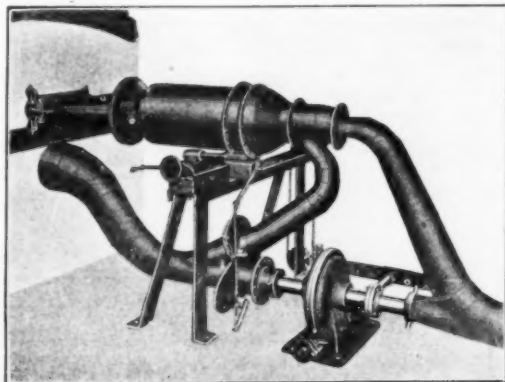
The question of accuracy in trimming is definitely determined by the use of punches and dies that are carefully constructed to conform to the shape of the article to be trimmed. The construction and simplicity of the press permit the turning out of a maximum product by an operator of ordinary skill and intelligence. [Holmes Brothers, 500 South Peoria street, Chicago, Illinois.]



THE PRUDEN POWDERED COAL CARBURETER.

The fuel problem is one that is now forcibly being brought to the attention of industrial executives the world over. With the price of coal reaching abnormal levels, the large consumers are confronted with greatly increased cost of power production. The solution appears to be in the use of low-grade coals and to that end a mechanical device for the utilization of powdered coal has been evolved.

In the mechanical application of the Pruden carbureter, the air and powdered coal are intimately mixed and the mixing



intensified in its travel through the burner to the combustion chamber of the furnace. Here the chemical combination of the oxygen of the air and the fuel elements of the powdered coal takes place, resulting in perfect and instantaneous combustion.

The engineering problem of the adaptation of powdered coal as a fuel to a particular plant is first worked out by specialists in a research laboratory by means of a demonstration plant provided for that purpose. The results thus obtained establish on a proven basis the equipment and installation required. [Powdered Coal Engineering & Equipment Co., 2401-21 Washington boulevard, Chicago, Illinois.]

THE STRATTON STEAM SEPARATOR.

The Stratton steam separator shown in the accompanying illustration is designed for the removal of water from steam, and it is particularly recommended to rubber manufacturers for use on the steam inlets of vulcanizers.



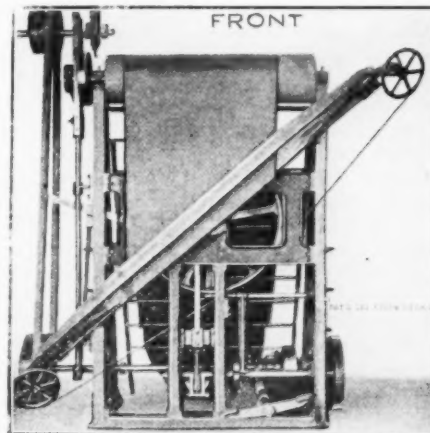
This separator utilizes centrifugal force as the means of separating the water from the steam. As the steam and water enter the separator they are caused to pass through a spiral path formed about a central core. The sudden change from a straight line flow to this spiral path imparts a whirling motion to the steam and water. Water is 200 or 300 times heavier than steam, and therefore does not turn corners as easily. At any turn the centrifugal force throws the water against the wall forming the bend, while the steam makes the turn and goes on without the moisture. With a properly formed bend, large or small quantities of water will swing out of the curving steam current, meet the wall at an angle, and slip smoothly along without the slightest spatter or splash, following closely to the wall until the motion dies out.

Thus complete removal of water from the steam is secured and

the vulcanizer receives only dry steam. [The Driscoll-Russell Co., 90 West street, New York City.]

THE BOLTON VERTICAL BIAS CUTTER.

Bias fabric cutting machines are very important and most necessary in the making of various rubber goods, particularly in the manufacture of pneumatic tires, footwear and mechanical goods. The standard, horizontal bias-cutter is the type generally used in cutting the strips of frictioned fabric that are used in rubber goods manufacture. As a radical departure in design, construction and operating principle the vertical machine here illustrated presents a variety of



novel and interesting features. In operation the roll of frictioned fabric is placed in the take-off bearings arranged at the back of the machine and the end of the fabric is run between the tension rollers while the liner is wound up on a power driven roller provided for that purpose. The fabric is then passed over the feed roller at the top of the machine and down the front

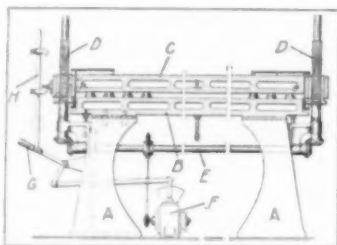
to the diagonal clamping and cutting device shown in the front view of the machine and which may be adjusted to any required angle. The cutting is performed by a shuttle-like knife that is reciprocated by a rack and pinion gearing driven from the main shaft. As the fabric is intermittently advanced a predetermined distance by the top feed roller the fabric is firmly held by the clamping device while the reciprocating knife cuts off the strips in successive regularity. The machine occupies a very small floor space. In fact a machine to cut 60-inch cloth on a 60-degree angle occupies a space of 9 feet by 5 feet with head room of 14 feet and requires no foundation for its support. Its accuracy is guaranteed and the cutting knife may be changed within a few moments. Two men are required for its operation. [The Gutta Percha & Rubber Manufacturing Co., 126-128 Duane street, New York City.]

MACHINERY PATENTS.

DEAD WEIGHT MOLD PRESS VULCANIZER.

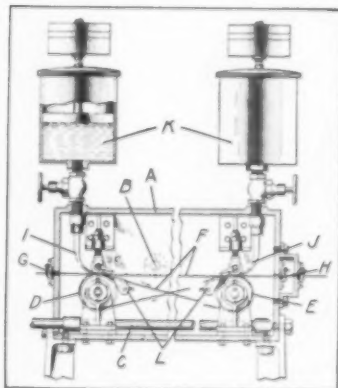
TO avoid the possibility of excessive pressure in mold curing and the consequent damage to the molds is the principal object of the invention here illustrated. The machine is shown in vertical section with a few molds in position between the platens. Two standards *A A* rigidly support the bottom platen *B*, while the movable upper platen *C* is raised and lowered by two vertical screws *D D*, geared by miter gearing to the shaft *E*, driven by motor *F*, both platens being chambered for steam. The end lugs of the upper platen are provided with square holes and loosely fitted to the square brass nuts that are threaded on the vertical screws. The bottoms of the nuts are flanged to engage the under sides of the lugs.

To raise the upper platen the belt-crank lever *G* is pulled down, starting the motor, the brass nuts are advanced by the revolving vertical screws and the flanges of the nuts engage the lugs, thereby raising the platen. Connected to the lever *G* is a sliding rod *H*, provided with two stops, the purpose of which, briefly stated, is as follows: When the platen is free from the molds the upper stop contacts with a projection on the lug, thereby raising the starting lever and stopping the motor. When the starting lever is raised the motor reverses and the platen is lowered until it rests on the molds. By this time the lug projection has come in contact with the lower stop, thereby lowering the starting lever and stopping the motor. Thus it will be seen that the platen rests on the molds with its own weight, the molds being all of the same thickness and the platen of sufficient weight to afford the required pressure. [Christian Hamilton Grey, Essex, England. United States patent No. 1,234,330.]



FABRIC BAND STRETCHING AND COATING MACHINE.

A band of fabric is formed, compressed, stretched and coated with rubber solution in a heated vacuum chamber and finally passed through a cooling chamber, according to this invention.



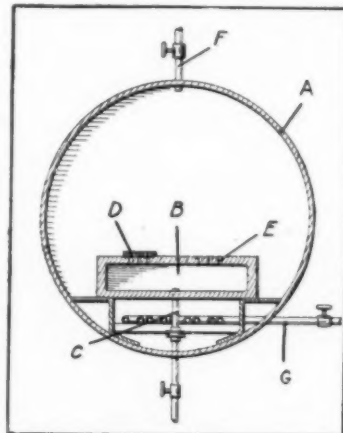
The illustration is a sectional view of a broken side elevation of vacuum chamber *A*, provided with suction pipe *B*, heating pipe *C* and stretching drums *D* and *E* around which the fabric band *F* passes. These oppositely placed drums comprise sections of reduced diameters that stretch each wrapping tightly until a certain amount of elasticity has been removed without injury to the fiber.

The band enters through an automatically closing gate *G* and passes out through the double gate *H*.

Rubber solution is applied to the band through nozzles *I* and *J* from solution tanks *K* that are provided with weighted pistons for positive feeding. Adjacent to each drum are scraping devices *L* that remove the surplus rubber. The band is passed through a cooling chamber, not shown, in which a blast of air cools and hardens it so that it may be handled. [Lawrence A. Subers, East Cleveland, Ohio, United States patent No. 1,234,704.]

RUBBER SOLE VULCANIZING AND EMBOSING APPARATUS.

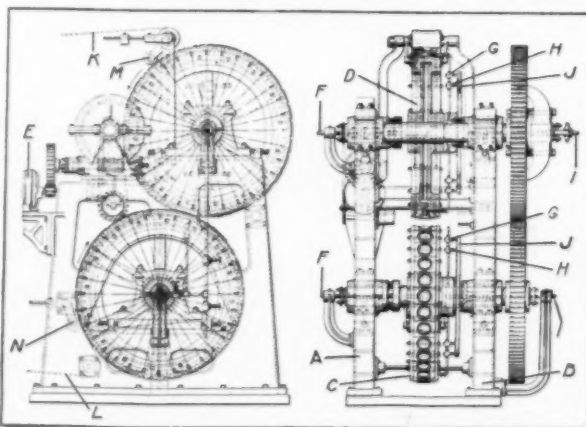
In this invention rubber soles are subjected to both heat and pressure in a vulcanizer and at the same time the design is imprinted on the tread surfaces of the soles. Referring to the illustration, which is a cross section of the apparatus, *A* represents the vulcanizer, and *B* a removable table formed with a hollow chamber that is connected to an exhaust pump by pipe *C*. The upper part of the table is provided with engraved outlines forming the tread designs and the shapes of the soles, one of which, *D*, is shown in place. Connecting channels in the design molds communicate with air ducts *E* that open into the hollow chamber of the table.



When the soles are placed in the vulcanizer and aligned with the design molds, air under pressure is admitted at *F*, which presses the soles flat and embosses the treads. At the same time, the air is exhausted from the chamber in the table, the entrapped gases, fluids and moisture are forced out of the soles. Heat is then admitted to the vulcanizer through pipe *G*. [Clifford Lee, assignor to Goodyear's Metallic Rubber Shoe Co.—both of Naugatuck, Connecticut. United States patent No. 1,232,573.]

MACHINE FOR MAKING HOLLOW RUBBER ARTICLES.

In the accompanying illustrations a side view and sectional elevation are shown of one form of this invention, namely, a machine for making hollow rubber balls. It is supported on a base plate by two standards *A* and *B* and comprises two wheels *C* and *D* of similar diameter that are journaled in suitable bear-



ings and driven at uniform speed by a motor *E*. The upper wheel is offset from the vertical plane that passes through the axis of the lower wheel and in the periphery of each wheel are arranged the upper and lower mold halves with cutting and pressing edges that form the completed balls. The rims of the wheels are chambered for steam that is supplied through pipes *F*. Each cavity is provided with suction or vacuum openings connected by pipes to release valves *G* and vacuum valves *H*, supplied through pipes *I*, the flow of air to and from the molds being regulated by these valves which are automatically operated by cam rings *J*.

When the wheels are revolved in the direction indicated by the arrows, two strips of uncured stock *K* and *L* are fed to the upper and lower wheels, respectively, passing around guide rollers and under idler rollers *M* and *N*, causing the strips to adhere to the peripheral molds. The cam rings depress the suction valve stems and the strips of stock are drawn into the mold cavities when a pill of chemical material that will gasify under heat is automatically dropped into each of the lower molds. As the two wheels meet, the two strips of rubber are forced together at the edges of the cavities and the edges severed from the strip, when the action of the cam releases the vacuum and applies pressure in each cavity, the completed balls remaining in place until they are freed by their own weight. They are then placed in molds and vulcanized in the usual manner, when the gases produced by the action of heat on the chemical pills serves to expand the balls within the molds. [James W. Brundage, assignor to The Miller Rubber Co.—both of Akron, Ohio. United States patent No. 1,232,764.]

OTHER MACHINERY PATENTS.

THE UNITED STATES.

- 1,234,065. Vulcanizer for rubber tires. C. E. Miller, Anderson, Ind.
 1,234,431. Vulcanizing press. B. F. White, Rock Island, Ill.
 1,234,526. Machine for treating rubber and other heavy plastic material. F. H. Banbury, Ansonia, Conn., assignor to Birmingham Iron Foundry, Derby, Conn.
 1,235,117. Repair vulcanizer. Marion X. Corbin, Savannah, Ga.
 1,235,226. Machine for cutting disks of cork or similar material. A. Minnemann, Delmenhorst, Germany.
 1,235,757. Machine for treating rubber and other heavy plastic material. F. H. Banbury, Ansonia, assignor to Birmingham Iron Foundry, Derby—both of Conn.
 1,236,963. Tire skiver. B. E. Maxwell, Wichita, Kan.
 1,237,131. Method of manufacturing reinforced inner tubes and mandrels therefor. H. G. Welch, Philadelphia, Pa.

THE DOMINION OF CANADA.

- 176,340. Machine for building tires, The Miller Rubber Co., assignee of F. F. Brucker—both of Akron, Ohio, U. S. A.
 176,363. Repair vulcanizing core. W. L. Heenig, Marion Johnston and E. W. Ohls, assignees of a third interest—all of Denver, Colorado, U. S. A.

THE UNITED KINGDOM.

- 106,242. Vulcanizer. Soc. Pour La Production & La Vente Des Articles en Caoutchouc "Bogaty" and J. A. Talalay, Bogatyr, Moscow, Russia.
 106,320. Machine for folding canvas strip for engine packing. G. Warwick, 80 Cobham Road, Seven Kings, Essex, and A. P. Crouch, 106 Cannon street, London.

PROCESS PATENTS.

THE UNITED STATES.

- 1,234,381. Plastic material and process of producing same. S. J. Peachey, Heaton Mersey, near Manchester, England.
 1,235,052. Manufacture of tires. R. B. Price, New York City, assignor to Rubber Regenerating Co., a corporation of Indiana.
 1,236,049. Process of making rubber-coated leather articles. J. H. Butler, assignor of one-half to F. W. Austin—both of Gloversville, N. Y.
 1,236,183. Coating composition and process of making the same. H. K. Kiso, New York City.
 1,236,235. Mollifier or comforter. A. R. Tufts, Vancouver, British Columbia, Canada.
 1,236,685. Process of manufacturing waterproof sheeting and the like. J. W. H. Dew, London, England.
 1,237,227. Cushion tire and method of making the same. J. L. Swartz, Akron, Ohio.

THE DOMINION OF CANADA.

- 176,205. Process of compounding rubber and fabric. The Standard Woven Fabric Co., Framingham, assignee of F. J. Gleason, Walpole—both in Massachusetts, U. S. A.

THE UNITED KINGDOM.

- 106,270. Plastic compositions. E. Krause, 6 Sedanstrasse, Steglitz, Berlin, and H. Blucher, 1 Kanalstrasse, Gohlis-Leipzig, Germany.

THE FRENCH REPUBLIC.

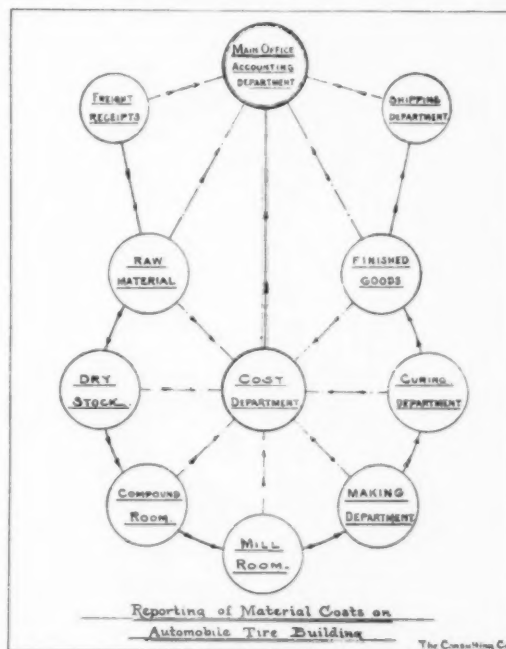
483,062 (September 30, 1916). Process for the manufacture of articles containing elements formed by a plastic and a fibrous material. The Rubber Regenerating Co.

483,064 (October 2, 1916). Armored plastic material. G. Couvert.

RAW MATERIAL COST ACCOUNTING IN TIRE FACTORIES.

The accounting of labor costs has in the past received considerable attention and study, with the result that labor cost figures are not difficult to compute. This is particularly true now that piece work prevails in so many factories. The progressive cost of raw materials, however, has not been given the consideration or thought that this important factor in manufacturing really deserves. For that reason the following diagram and explanation are of interest:

The smaller rubber factories rarely give enough credit to wastage in their cost accounting. Raw material, of whatever nature, in rubber manufacture, is undergoing a constant shrink-



age from the day the car is unloaded to the time the finished product is shipped. It is possible in time, from previous experience, to estimate a predetermined percentage for shrinkage as material passes through the various departments. But to check this predetermined shrinkage a system of reports should be made to the cost accounting department, and rigidly adhered to, thereby stopping many a leak before it reaches the proportion of a flood and finally becomes disastrous.

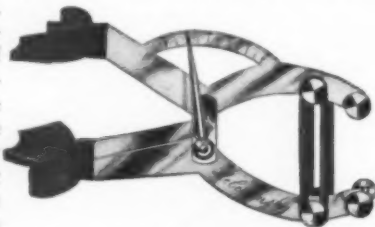
Referring to the diagram, the solid lines between the departments are represented by circles and indicate the travel, step by step, of the material through the various processes into the finished product. The dotted lines, between the departments and cost department represent a system of reports that are made to the cost department or main accounting department, as the case may be, covering what passed out of the particular department making the report, and to which department the material reported upon was delivered.

Thus the main office accounting department would have absolute control of factory costs through an accurate system of accounting that would show the cost of raw materials consumed in production, with full consideration of the shrinkage in process. [The Consulting Co., Cincinnati, Ohio.]

New Goods and Specialties.

APPLIANCE FOR MAXILLO-FACIAL MECHANOTHERAPY.

IN a recent number of "The Dental Cosmos" appears an interesting article by Emile Linet on a new appliance for maxillo-facial mechanotherapy, to overcome contractures of the mandible. The appliance, shown herewith, consists of two levers of the first class connected together at the fulcrum point. One end of each lever bears a small, strong tray, into which fits a piece of soft rubber to protect the teeth. The other end of each lever, *i. e.* the "force" end, bears two pairs of knobs which serve for the attachment of elastic rubber bands. Such bands, of known strength, are supplied with the appliance. The superior lever carries a scale, upon which a pointer upon the lower lever registers in millimeters the vertical distance between the two trays, *i. e.* the separation distance of the jaws.



The action of this instrument can be definitely measured and controlled and tends gradually to reduce and finally eradicate contractures, whether of cutaneous, articular or muscular origin. [The S. S. White Dental Manufacturing Co., Philadelphia, Pennsylvania.]

VULCANIZED RUBBER HAIR-PARTER.

A simple device which enables the user to be independent of a mirror and to part the hair easily and with exactitude consists of two flat strips of vulcanized rubber which may

be bent lengthwise to conform with the shape of the head. These strips are pivoted together, edge to edge, so that either strip may be swung around independently of the other. The strips are laid with their confronting edges along the line where the part is to be made. One strip holds the hair down on an imaginary line, while the other sweeps the free hair to one side, making a straight and even parting. [James Maxwell,



Senior, 108 West Forty-third street, New York City.]

SILUMINITE: A NEW INSULATOR.

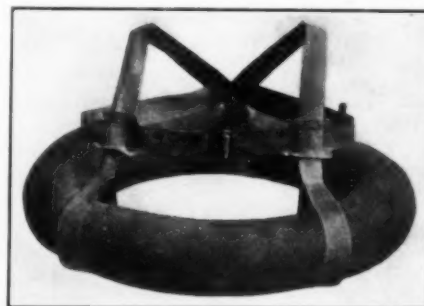
This new insulating material is a hard black substance, ringling like slate, but of far greater strength; it can be sawn, filed, drilled, tapped, turned, and polished with ease, and can be molded to any shape in the course of manufacture, but not afterwards. It is not softened by heat (it is subject to a temperature of more than 600 degrees F. at the makers' works) and is not brittle. Immersion in oil or caustic alkali, or boiling water, leaves it unchanged, and it is non-hygroscopic. It possesses high dielectric strength, this being between 10,000 and 13,000 volts per millimeter. Its structure is homogeneous and dense, the weight of a square foot $\frac{1}{4}$ -inch thick being 2.4 pounds.

Metal parts can be insulated by compressing Siluminite on them in any desired shape, thus avoiding the cementing or screwing process now necessary in most cases. The substances with which it will most directly compete are porcelain, glass, mica, fiber, ebonite, wood, slate, marble and molded compounds. It is supplied in the form of rods, sheets, tubes and various molded specialties. [The Siluminite Insulator Co., Limited, Southall, London, England.]

THE "KANTSINK" SWIMMING HARNESS.

The beaches are thronged with bathers, the majority of whom cannot swim, yet are eager to learn, and a trustworthy aid that does not cumber the would-be swimmer's movements should

find a ready market. In the apparatus shown in the accompanying illustration a rubber tube is fastened to the body with one buckle and traveling loops that permit perfect adjustment.



The "Kantsink" swimming harness is made in two regular sizes, one for children up to 16 years and the other for men and women up to 40-inch bust measure. Extra large sizes are also furnished, if desired. [Kant Sink Swimming Harness Co., Traverse City, Michigan.]

RUBBERIZED SHARKS.

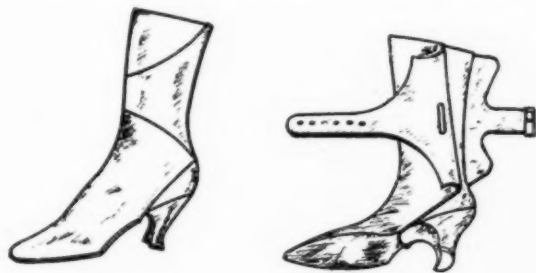
Sharks of such gentle disposition that feminine bathers may ride them over the waves are the latest seashore diversion, taking the place of the familiar surf-board. This ferocious appearing but harmless semblance of the man-eater that ter-



rorized the Atlantic coast last summer is made of rubberized fabric, inflated with air. It is light in weight and can be easily carried, yet it will support an adult and provides a means for the performance of many clever and thrilling water "stunts."

SANDAL GAITER WITH RUBBER SOLE.

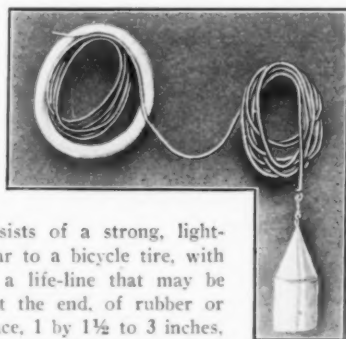
A neat appearing sandal gaiter, shown herewith, is made with an all white rubber sole with white duck top, or red rubber sole and tip, or all black, and a top of tan duck or other storm-proof material. It is a combination of a sandal overshoe and



an over-gaiter, and protects the fine cloth tops of shoes, or silk hosiery when worn with low shoes, also acting as a new top for shoes that are partly worn and misshapen. This sandal gaiter is easily slipped on and fastened and, it is claimed, will fit any size ankle. As it can be folded and carried in a hand-bag or coat pocket it affords a convenient accessory to the traveling wardrobe. [The Styles Resurrection Co., Trenton, New Jersey.]

THE NELSEN DIVING LINE BUOY.

In drowning accidents would-be rescuers are frequently drawn under water by the victim, resulting in a double tragedy. Many times, also, bathers are drowned in the surf where a boat cannot reach them. The diving line buoy here shown is designed to meet all difficult situations in rescuing the drowning and to be carried as part of the regular equipment of boats, ships, yachts, etc., and at life saving stations, piers and docks. It consists of a strong, light-weight rubber tube, similar to a bicycle tire, with valves for inflation, and a life-line that may be 100 feet long. A tube at the end, of rubber or metal, has an inflating space, 1 by 1½ to 3 inches, inflated in the same way as a punching bag. This is 16 to 18 inches in diameter, and the smaller this tube, the farther it can be heaved. [Nelsen & Woods Manufacturing Co., 425 First National Bank Building, Long Beach, California.]

**"FYBER-WELD" GOGGLES FOR WELDERS.**

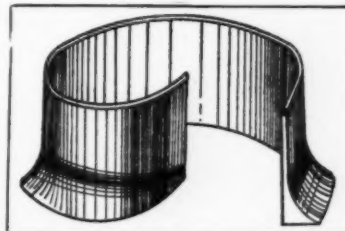
The protecting goggle is a very essential part of the welder's outfit, his safety frequently depending on the defense of his eyes from flying sparks. A goggle specially designed for this purpose is called the "Fyber-Weld." The frame is made of vulcanized fiber that is claimed to be an absolute non-conductor of heat and electricity, and the composition, although light in weight, is so strong that the goggle frame can even be thrown without breaking. Side pieces are of the ventilating type and the center is of soft, flexible leather. An adjustable elastic band allows the goggle to be comfortably and securely fastened to the head. The illustration shows the spectacle type of eye shield,



preferred by many, embodying the same principles and having rubber-covered cable temples. [Chicago Eye Shield Co., 2300-2304 Warren avenue, Chicago, Illinois.]

"CROGOFF," A NEW GAME.

A game combining the principles of croquet and golf utilizes a device resembling the numeral 6 in shape and having upright walls and a thickened base provided with rubber to prevent slipping. This is called a "coop" and in playing the game golf balls are driven into it by putters. The outfit consists of nine coops, two golf putters and two balls. The coops may be set up on a lawn, a room floor or the deck of a vessel, the rubber base holding them securely to the surface, dispensing with the necessity of nails, screws or pegs. The formation of the coop allows the ball to enter and remain, thus taking the place of a hole socket. "Crogoff" is recommended as an ideal game for wounded soldiers. [The "Crogoff" Co., 123 Rotton Park road, Birmingham, England.]

**RUBBER TUBE WATER FILTER.**

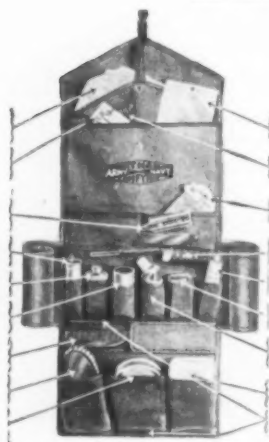
The dangers of contaminated drinking water are well known, and soldiers, travelers, fishermen, hunters, etc., are apt to be placed in the uncomfortable position of going thirsty or running the risk of contagion. A device designed to remove this risk and render any water safe to drink consists of a slender tube of stout white rubber, with a red rubber cup at one end which is plugged with antiseptic cotton. The cup end of the tube is placed in the water, which is then drawn through the tube by suction. This automatic filterer is so small that it can conveniently be carried in the pocket. [The Ideal Rubber Co., Los Angeles, California.]

**TRI-PLY COMBINATION ERASER.**

Edge view showing inlay.

The special feature of this eraser consists of a combination of two grades of rubber, adapting it for use on all kinds of paper. In erasing typed matter on manifolds or other delicate sheets the ordinary eraser, suitable for use on a heavy, hard-surfaced paper, does not effect its purpose satisfactorily. Composed of a three-ply stock with a thin layer of harder grade rubber and two outside layers of soft, pliable rubber, this eraser has only to be turned at right angles to the paper when erasing on heavy sheets or at an angle of 45 degrees for the thinnest tissue in order to bring the proper part into play. The saving in time and annoyance to the user is self-evident, and the irregular hexagon shape is of further value in effecting difficult erasures. This handy office accessory is listed by the maker as No. 399. [Weldon Roberts Rubber Co., Newark, New Jersey.]

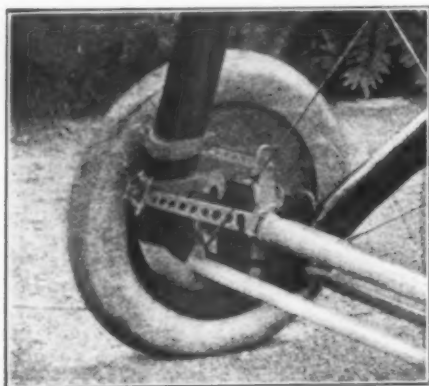
THE NATHAN COMFYKIT.



A durable and compact container for the many small articles in daily use by travelers, soldiers and sailors, is shown in the Nathan Comfykit. The case is made of two-ply rubberized auto cloth in olive-drab, neatly bound, and with many pockets for the various articles, which are 18 in number and range from a safety razor to safety pins. The kit, when opened, is $22\frac{1}{2}$ by 9 inches and when folded, occupies space measuring 9 by 5 by $2\frac{3}{4}$ inches. Its weight complete is only 24 ounces. [Nathan Novelty Manufacturing Co., 84 Reade street, New York City.]

HEAVY ELASTIC AVIATION CORD.

The use of metal springs or other appliances in airplane construction, intended to resist the sudden shock of landing, has proven ineffectual for the purpose, and designers of modern airplanes have



tried various expedients with unsatisfactory results. It is due to the remarkable quality of india rubber that specially constructed heavy elastic cords are successful in heavy airplane construction to secure the cushioning effect when landing.

The wheel supports, at both front and rear of the machine, are provided with steel tubes that slide within each other. The rubber cords supply the necessary tension to the sliding supports, so that when the machine is on the ground the weight is cushioned by the tension of the rubber cords and when flying they are relaxed.

The standard cord is $9/16$ -inch in diameter, the core being composed of many square rubber threads laid parallel to each other and enclosed in a braided-on cover composed of hard-twisted yarn. Sixteen of these strands are generally used to a machine, but that depends, however, on the weight and style of the airplane. [J. W. Wood Elastic Web Co., Stoughton, Massachusetts.]

QUICK TIRE SERVICE, INC.

The Quick Tire Service, Inc., Louisville, Kentucky, has taken over the distribution of United States tires exclusively and has moved into new quarters at Third and Kentucky streets. The building is two stories high and contains 14,000 square feet of floor space. In every detail it is arranged to give prompt tire service to consumers, a special feature being its accessibility on all four sides. A. Craig Culbertson, formerly manager of the Compression Tube Co., succeeds C. T. Ballard, Jr., as manager, and Andrew Hunnicutt has been made assistant manager.

GERMANY EXTOLS RUBBER SUBSTITUTE GLOVES.

In a German publication (Silberstein and Colman, Zentralbl. f. Chir., 1916, No. 1) we read that the obvious disadvantages of rubber gloves—namely, their relatively high cost and poor wearing qualities—have led to search after efficient substitutes, one of which consists of a new preparation called "Sterilin," an organic ester which is applied to the hands in liquid form. Drying takes place in a few minutes, leaving a transparent, non-sticky coating impervious to bacteria and unattacked by benzin, oils, dilute acids, corrosive sublimate, blood, or pus, yet readily soluble in a preparation accompanying the outfit, or in acetone. It is said that antiseptic substances may be incorporated to increase the aseptic qualities of the preparation.

This sounds very fine, but we hazard the guess that the shortage of suitable rubber, not disadvantages of rubber gloves, led to the search for this substitute, and that with the coming of peace the merits of rubber gloves will again be appreciated in Teutonic countries. As a matter of fact, these so-called liquid gloves are not sufficiently durable to enable a surgeon to undertake long operations with them, and when left any length of time on the hands cause them to become numb and swollen.

RUBBER CASES BEFORE THE BRITISH PRIZE COURT.

An important rubber case lately came before Sir Samuel Evans, President of the British Prize Court. Messrs. Andresen & Muller laid claim to a quantity of rubber shipped on the Norwegian steamship "Bergensfjord," from New York to Bergen. The rubber had been seized as a prize on November 1, 1914, and the Crown claimed condemnation, contending that the goods, consisting of 347 cases of rubber, had been purchased from A. W. Brunn by A. Eber & Sohn, of Hamburg, Germany, through the account of Andresen & Muller as intermediaries. To support their claim, Andresen & Muller could produce a few cables, an invoice and one or two other documents. Counsel for the claimants declared that the documents proved that the purchase was made from their own monies and on their own account. It was, however, held that the documents were obscure and would have to be carefully collated before judgment could be rendered.

At a more recent sitting of the Prize Court, Sir Samuel Evans, the president, was requested by the Crown to condemn several packages of rubber seized on the three Danish steamers "Hellig Olav," "Oscar II" and "Frederick VIII." The rubber, done up in 11-pound packages to a total weight of six tons, had been sent from New York to Gothenberg, Sweden. Against this, Phillip Bauer & Co., Inc., New York City, protested on the ground that they were the owners. The Crown contended that the goods were destined for Germany and that, according to the evidence collected from intercepted cables and letters, the true claimants ought to be Phillip Bauer Co., of Hamburg, Germany.

The order of the Court was that the rubber be condemned as prize goods of absolute contraband nature destined for Hamburg.

An order for costs was made against the claimants, who were given leave to appeal.

TORPEDOED SHIPS NOW LOOTED OF RUBBER.

According to the crew of the torpedoed Norwegian steamship "Venglia," captured June 15 by a German submarine and used for 16 days unsuccessfully as a decoy for allied shipping, submarine crews whenever possible are looting captured ships of rubber and copper before sinking them. The U-boat commander stated that he had been away from his base for five months, supplies and torpedoes being brought by another U-boat whenever summoned by wireless. When his cargo hold was filled he would return home, he said.

The Editor's Book Table.

REPORTS OF THE PROGRESS OF APPLIED CHEMISTRY. ISSUED by The Society of Chemical Industry. Volume 1, 1916. London. Harrison & Sons. [8vo, 325 pages.]

THIS volume presents the progress of applied chemistry, from January, 1914, to June, 1916, reviewed in 15 sections, each by a recognized authority.

A section of 28 pages is devoted to India Rubber by H. P. Stevens, who gives a very comprehensive outline of progress under the following topics:

Statistics of Production; Production of Raw Rubber; Non-Caoutchouc Constituents of Rubber Latex; Effect of Details in Preparation; Properties of Rubber; Properties of Vulcanized Rubber; Physical Tests of Vulcanized Rubber; Quality and Uniformity of Rubber; Vulcanization; Accelerators; Synthetic Rubber; Analysis of Vulcanized Rubber.

The section concludes with over a hundred references to original sources and is a valuable compilation for the rubber chemist and student of rubber technology.

EIGHTEENTH YEAR BOOK AND ANNUAL REPORTS OF THE Rubber Association of America. Prepared by the Secretary. [8vo, 102 pages.]

This annual publication, prepared and printed for the members of the Association, contains a large amount of information of value to them, and also to all engaged in the rubber industry.

There is a full list of firm, associate and honorary members of the Association, the list of officers and standing committees. The several divisions are each represented in detail, with lists of officers, committees and membership. These divisions represent the manufacturers of mechanicals, soles and heels, sundries, hard rubber, also reclaimers, proofers, and those interested in foreign trade. The constitution and by-laws, the report of the seventeenth annual meeting, and the seventeenth annual banquet are given in detail. Included also are the rules and regulations governing transactions between buyers and sellers. There are excellent double page half-tones of the banquet and the outing of 1916.

While much of this has been previously published, its collection and arrangement in permanent form makes the book one valuable for reference in every rubber man's business office.

CHEMICAL PATENTS AND ALLIED PATENT PROBLEMS. BY Edward Thomas, John Byrne & Co., Washington, D. C. [8 vo, 58 pages, interleaved for notes. Bound in buckram. Price, \$2.50, delivered.]

This volume, for which a genuine need has existed, represents a complete rewriting of "Process Digest" by the same author, a member of the Appellate Federal Bars of New York and Washington, all the cases having been reread from the point of view of an attorney and expert witness, instead of that of a Patent Office examiner. Chemists and their attorneys will find it a clear and concise statement of the United States patent law. The major part of the work discusses broad underlying principles, while the remainder takes up points of practice and is accompanied by a virtually complete "finding list" of the cases on which the law of chemical patents is based, also including other important cases intimately related in reasoning. Upwards of 1,300 cases are cited under nearly 250 separate headings, with brief individual comments. All citations are given in footnotes, making the book interesting reading for the chemist and at the same time enabling the attorney to refer readily to pertinent cases. The references have been condensed by citing in general only the appeal case, or the last of a series, if that rules on all the points previously raised. Specific notes are given on the kind of evidence needed in chemical and allied cases, also notes covering cases on damages, licenses, etc.

THE FINANCIER RUBBER SHARE HANDBOOK. FOURTEENTH Edition, May, 1917. The Financier & Bullionist, Limited, London, England. [Cloth, 8vo, 877 pages. Price, 4 shillings, net.]

As in the past, this convenient handbook contains a wealth of details regarding the companies owning rubber plantations in Ceylon, South India, Borneo, Java, Burma, Sumatra, Africa, the Malay Peninsula and South America. It gives the authorized share capital of each of these companies, the amount issued, the balance sheet, the list of directors, acreage and similar information well arranged and quickly available. An alphabetical list of directors in all these companies is appended, including a list of secretarial groups with London addresses. In his preface, E. L. Killick, rubber expert of the "The Financier," explodes the boggy of over-production, showing that enormous expansion of the world's consumption has kept pace with increased production. He further points out that as there has been no extensive planting in the Middle East since the period 1910-12, and as the rate of increased production will rapidly decline beginning with 1917, a continued increasing demand at the past rate will find the world facing not a surplus, but an actual shortage of rubber.

BRAZIL TO-DAY AND TO-MORROW. BY L. E. ELLIOTT, F.R.G.S. The Macmillan Co., New York City. [8vo, 338 pages, illustrated, cloth. Price, \$2.25.]

Brazil continues to be a land of much moment to the rubber trade, which will welcome this handsome, absorbing and comprehensive work by one who knows the country well. Its history and colonization are interestingly narrated and the present and probable future status of its social conditions, transportation, industries, finance and commerce are clearly set forth. The chapter on the world's horticultural and medicinal debt to Brazil is little short of a revelation.

A section of 28 pages presents intelligently the history, development and details of the rubber industry of the Amazon as contrasted with the plantation industry of Malaysia. Methods of latex collection and coagulation, the system of labor and financing, and the various kinds and grades of Brazilian rubber are described. Measures necessary to put the industry on a sounder basis, particularly more careful, cleanly and uniform methods of coagulation, and more equitable and stable export taxes, are outlined. The controversy is also referred to as to the relative merits of plantations or further opening up of the untapped reserves of the interior, estimated at 300 million trees, many of them "black" *Hevea* yielding especially high quality latex. The author doubts if the present average rubber production of about 37,000 tons is likely to increase greatly for a time at least, because of the scarcity of labor, the high cost of living and the enormous expenditures necessary on roads, drainage and the like to open up virgin forests.

THE MANUFACTURE OF RUBBER GOODS. BY ADOLF HEIL and Dr. W. Esch, translated by Edward W. Lewis, A.C.G.I., F.C.S. Charles Griffin & Co., Limited, London, England. J. B. Lippincott Co., Philadelphia, Pennsylvania. [Large 8vo, 236 pages, illustrated, cloth. Price, \$4.]

Among the authoritative technological handbooks for the use of manufacturers, chemists and others engaged in the production of rubber goods this work has since 1909 occupied a prominent place. While the present reprint assumes a more elementary character at this advanced stage of the industry, it sets forth clearly and concisely those sound fundamentals which must still be the basis of successful manufacture, and will prove a useful addition to the library of every rubber man of the younger generation. Five chapters are devoted to the raw material, the vulcanization of rubber, the mixings, the manufacture of soft rubber articles, and the manufacture of ebonite. The

introduction details a plan and arrangement of a rubber goods factory, and two appendices are devoted to reclaiming rubber and specific gravity.

COMMUNICATIONS OF THE NETHERLANDS GOVERNMENT INSTITUTE FOR ADVISING THE RUBBER TRADE AND THE RUBBER INDUSTRY. Established at Delft. Part I. [Paper cover, 36 pages.]

In our issue of April, 1917, we reviewed a collection of important papers recording researches made in the above institute and published by the Trade Department of the Netherlands Ministry of Agriculture, Industry and Commerce, under the title, "Mededeelingen van den Ryksvoorlichtingsdienst ten behoeve van den rubberhandel en de rubbernijverheid te Delft." These papers were preceded by an introduction showing the relation between the various subjects treated. The International Association for Rubber Cultivation in the Netherlands Indies, recognizing that the fact that these valuable studies were written in Dutch would prevent their wider perusal, now offers an elaboration in English of this introduction. This first of the six parts in which the English version is to appear, is now ready for the public. It treats "The Examination of Latex and the Valuation of Raw Rubber According to the Exterior," seven sub-divisions being as follows:

I. The state of colloidal aggregation of the rubber in the latex.

II. Determination of the caoutchouc percentage of latex.

III. The non-caoutchouc compounds of the latex.

IV. The different methods of preparing rubber.

V. External valuation of raw rubber.

VI. Spots on raw rubber.

VII. Transparent raw rubber.

While the introduction mentioned facts not elsewhere published, this elaboration contains points not found in the separate papers of the complete Dutch work. On the other hand, the subjects are, of course, hardly more than rather detailed summaries.

JAARBOEK VAN NEDERLANDSCH INDIE, 1916. AFDEELING Nijverheid en Handel van het Departement van Landbouw, Nijverheid en Handel, Buitenzorg, Java. [Limp cloth, 237 pages, 31 illustrations, tables.]

This finely illustrated yearbook of the Dutch East Indies was compiled by the Section for Industries and Commerce of the Department of Agriculture, by order of the Dutch East Indian Government, and presents a general review of the conditions in these colonies as they were in the year 1914. The opening chapter is devoted to a short description of the geological nature, climate, population, flora and fauna of the islands. Further brief and lucid chapters treat such subjects as Government and Judicature, Finance and Taxation, Agriculture, Commerce, Traffic and Communications. In connection with the rubber industry, the number of enterprises, their distribution, the acreages devoted to the different kinds of rubber, as well as the quantities and values exported during several years, find mention. Most of the subjects are prefixed by a short historical summary.

Although occasionally more detailed treatment would have been desirable, the volume is both interesting and valuable, and since it is published in English, should find a large circle of readers.

WIRES AND CABLES, BULLETINS 49302-3-4. GENERAL ELECTRIC Co., Schenectady, New York. [4to, 84 pages.]

These bulletins, of a series distributed by the above-named company, while in the nature of a catalog, contain a great amount of information as to the progress and method of underground and submarine transmission of electricity. Description of the various forms of cables, terminology decided upon by the Bureau of Standards, tables giving resistance, inductance, reactance, impedance, maximum voltages of cables, cords and flexibles are given, and added to this are descriptions of coupling boxes, cable bells, junction boxes, manhole boxes,

tapes and splicing gum and filling compounds. In all, the bulletins are informative and attractive.

NEW TRADE PUBLICATIONS.

THE Federal Rubber Co., Cudahy, Wisconsin, has published a little booklet entitled "Care Saves Wear," which treats of the care of tires. Photographs of damaged tires are shown and full explanations given of the causes of injury, with suggestions for prevention. Motorists can read this book with interest and profit.

* * *

Users of trucks—and what progressive manufacturing firms today are not?—will find interesting and informative reading in two well-illustrated booklets now being mailed on request by the Link-Belt Co., Chicago, Illinois. They are entitled "Link-Belt Roller Chains for Tractors and Trucks" and "Some Facts About Roller Chain Drives." The latter is written by a large user of chain drives, the Smith Motor Truck Corporation, Chicago, Illinois, and points out particularly the growing list of government decisions in favor of chain drive which has resulted from the severe tests of European warfare. Every argument appeals to reason.

* * *

With the determination of the United States Government to do its share in winning the war very largely through the air, the Army and Navy Air Services have come into far greater prominence than hitherto and seemed to demand a specialized publication devoted to their interests. The Gardner, Moffatt Co., New York City, was quick to meet this need with the "Air Service Journal," a new illustrated weekly which made its first appearance July 12 with the announced purpose to chronicle the news of the entire aircraft industry; to relate foreign events in the air; and to record progress and tell of personnel. Judging by the character of the first issue, with its special authoritative articles on military and naval aeronautics, the paper will prove of value to manufacturers, officers, enlisted men and all engaged in the aircraft industry or service. The subscription price is \$3 a year; foreign subscription, \$4.

* * *

"The Journal of the Society of Automotive Engineers," formerly the "S. A. E. Bulletin," made its appearance dated July, 1917, as a handsome 9 by 12 inch standard size technical paper of 96 pages, with 78 additional pages of advertising. Henceforth its attractive appearance, varied contents and authoritative character bespeak for it a prominent place among American engineering journals. The first issue is devoted chiefly to the papers and reports read at the semi-annual meeting of the S. A. E. held June 26 at the Bureau of Standards, Washington, D. C., and indicate the vast amount of constructive assistance being rendered the government in perfecting and standardizing automotive construction of every type for war purposes. Many illustrations, diagrams and portraits embellish the text. The publication is issued monthly from the offices of the society, 29 West Thirty-ninth street, New York City, subscription price, \$5 a year; to members, \$2.50 a year.

* * *

No one who has read H. S. Firestone's article, "Three Important Lessons My Business Has Taught Me," in "System" for July, will marvel at the success of the Firestone Tire & Rubber Co., with its assets of over \$33,000,000, surplus of \$18,000,000 and 1917 business estimated at \$60,000,000. Such principles of integrity, sound judgment and determination are bound to win. While pointing out fundamentals, Mr. Firestone claims to know of no absolute formula for success. "Simmered down," he writes, "business success depends chiefly upon the man and his adaptability and willingness in balancing his own factors of strength and weakness, and appraising and balancing the corresponding factors in others."

Interesting Letters from Our Readers.

MALAYAN PLANTERS FEAR AMERICAN COMPETITION.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—The restrictions upon the export of rubber from the Malay Peninsula chiefly through the rigid control of the Tin & Rubber Committee of London, still is a subject of much interest and concern to American buyers and importers as well as to the Malayan planter and shareholder. It would appear that the latter, however, are impressed that their territory and the plantations they control are necessary to the world's supply of rubber and, therefore, are to an essential degree monopolistic.

The results of this erroneous view are being suspicioned and will soon, no doubt, be realized by these planters and shareholders as they see their present profitable (45 cents a pound net) American customer forced to abandon them.

The planters and shareholders of Malaya have great fears of Americans forcing down the prices—the abnormal prices—they have enjoyed from the world and especially from America, of fully 45 cents a pound net profit. I quote from a recent interview of the well known firm of Baker, Morgan & Co., Limited, in the "Straits Times," of Singapore:

Our greatest fear would seem to be American buyers forcing down the price out here (Malaya) greater than the fear of overproduction. With regard to this we fancy the government may be relied upon to step in . . . and fix a minimum price per pound . . .

This expressed opinion is but one that is prevalent there showing the local erroneous view that Malaya has the only rubber favored portion of the earth, and because of the monopoly their government can by law—by a printed statute—fix the minimum price which the outside world will have to pay, if they want the product. The ancient established principle of "supply and demand" as governing prices appears to have been entirely lost sight of as an equilibrium and safety valve. It is this erroneous, if not fallacious conception of things as they exist that the planters and shareholders are deceiving themselves thereby.

The restrictions by law recently enacted in amendments to the "Land Rules, 1904, Section 13," governing the alienation of lands in the F. M. S. Malay Peninsula, limit the title to not more than 50 acres to any except to British subjects. This has successfully barred out any planting by Americans. I quote from an editorial in the "Malayan Rubber Journal," entitled, "The American Invasion":

. . . and we are inclined to think that the F. M. S. Government's present policy of refusing to give any one except a British subject more than 50 acres of state land is intended primarily to delay an "American Invasion" until such time as a decisive policy is agreed upon.

The planters there are apparently disturbed by a bogey and are imagining ghosts and hobgoblins along the line as to the so-called "American Invasion," as is evidenced further from editorials from the same journal, which express in part the prevailing sentiment there:

. . . we dislike their (Americans) way of seeking to turn everything into a monopoly or trust, and for this latter reason have opposed their entry into Malay as rubber planters, . . .

The Standing Committee of the Planters Association of Malay at its recent meeting reported under the head of "Rubber's Chief Menace" amongst other things, as to the alienation of land:

The matter was discussed . . . and resulted in a request to the Federal Government to stop the alienation of land to aliens at a time when neither British capital nor British superintendence was available for opening up land.

The same report also states that the Rubber Growers' Association of London simultaneously approached the Secretary of

State for the colonies and as a consequence the High Commissioner has notified that no land exceeding 50 acres in the Federated Malay States will be alienated to any one except a British subject.

The Creator of the earth did not make Malaya and Ceylon the only spots on the globe suitable for the growth and production of *Hevea* rubber. The soil and climate of some of the islands of our own Philippines are equally as suitable by nature. I instance Basilan island of the department of Mindanao and Sulu. Also Sumatra, the third largest island on the globe, whose rubber producing domains have scarcely been explored or penetrated. Java is producing by leaps and bounds. W. H. Rickinson, the world-renowned rubber statistician and authority, states the exports from Java the first three months of 1916, were 2,531 tons; for the same period of 1917 they were 5,042 tons—approximately double or, to be exact, an increase of 99.1-10 per cent.

The Secretary of the Rubber Growers' Association of the Netherlands East Indies told me while I was in Batavia the fore part of the year, that the ratio of natural increase in the Dutch Indies based upon acreage planted and tree-age, would yield 120,000 tons or thereabouts in the year 1919. That is about the estimated requirement for America this year.

JESSE E. LA DOW.

Secretary of the Mansfield Tire & Rubber Co.

Mansfield, Ohio, August 8, 1917.

EXTRA DURABILITY IN TIRE TREADS.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—Believing some results obtained with a special composition of rubber, invented by me, are sufficiently novel and show points of advantage over regular mixings such that the material is worthy of note in THE INDIA RUBBER WORLD, I am mailing you data in reference to the material as used in treads of pneumatic tires.

First comparative results showed the specific gravity of factory regular white tread stock 1.80—of Textile, white tread stock 1.12. Comparison of weights of complete tires in size 32 by 3½—factory tire with regular stock throughout 14 pounds, 10 ounces, same but with Textile composition in tread only, 12 pounds, 6 ounces. Placed on rims and both inflated with same pressure, Textile tread measured ⅝ inch less in circumference from edge of rim to edge of rim than the regular tire.

This inflated measurement test brings out some points in tire construction that cannot be ignored. In the regular tire, it shows the carcass is stretched (weakened), the tread is also stretched and as stretched rubber is much easier to surface cut and puncture, the tire is weakened in every particular by the stretch. In comparison, the Textile tread, by resistance to stretch, not only retains, but adds to, the full strength of the carcass. Also this tread is not stretched and so retains all of the superior wear and resistance to cuts and punctures that are marked characteristics of Textile rubber.

To show the resiliency of Textile rubber a test that was made with a view to its use in solid truck tires is given. A section 4 by 3 by 1½ inches was placed under hydraulic pressure; the 3-inch measurement was compressed to ¼ inch by an amount of pressure registering 90 tons. When released, the section returned to all original measurements without a break.

The tires in actual service on cars are showing that the nap of the incorporated textile at the surface affords superior traction and resistance to slipping on wet pavements. The wearing service is proving more than equal to expectations, but as they

have been run only a few thousand miles at this writing, a total mileage report cannot be given now.

The extreme lightness in gravity of Textile rubber suggests its value in making pneumatic tires for airplanes.

JOSEPH R. SANFORD.

Salisbury, Connecticut, August 18, 1917.

THE OBITUARY RECORD.

ORGANIZER, BUILDER AND CONTRACTOR.

HARRY L. LEWMAN, president of the Ten Broeck Tyre Co., Louisville, Kentucky, died in that city in July after a prolonged illness, aged 51 years and one day. Mr. Lewman was born in Gosport, Indiana, July 15, 1866, though a large part of his business life was spent in Louisville. For many years he was in the general contracting business in association with his father, M. T. Lewman. The firm was noted for handling large contracts, prominent among which was the erection of the government dam in Warrior River, Alabama. This company made a specialty of courthouses and is said to have built more courthouses in the South than any other concern in the country.

In 1913 Mr. Lewman founded and organized the Ten Broeck Tyre Co., becoming its president and having personal supervision of the erection of the plant and the building up of the business, which he had the pleasure of seeing develop to such an extent that it was deemed necessary to greatly enlarge the original plant, and to add a textile mill for the purpose of weaving its own tire fabric, and this undertaking was nearly completed at the time of his death.

Mr. Lewman was twice elected president of the National Association of Master Builders. He was a member of Masonic orders. He was also a large property owner in Louisville and possessed holdings in several local enterprises. He is survived by a widow, a daughter and three brothers.

A PIONEER TIRE EXPERT.

W. Scott Alkire, prominent in the tire department of The B. F. Goodrich Co., Akron, Ohio, died at his home in that city recently, aged 54 years.

Mr. Alkire was one of the few men who grew up with the company. He entered its employ 26 years ago, and has seen it grow from small beginnings to its present prodigious proportions, and in its progress he was a factor. When the pneumatic bicycle tire business became important, he entered the tire department, and with the rise and growth of the automobile tire industry, he steadily progressed, becoming assistant superintendent of that department, relinquishing that office to become a prominent member in the experimental department, where his practical knowledge proved of great value to the company.

BORN A WELL KNOWN NAME.

Hon. Morton E. Converse, founder of Toy Town (Winchendon, Massachusetts,) died August 25, at the age of eighty. He was of the Converse family, notable as the founders of the Boston Rubber Shoe Co. He was a Civil War veteran, a member of the Massachusetts House of Representatives and Senate and a member of many clubs and orders, and was noted for his public spirit and broad philanthropy.

SON OF A PROMINENT RUBBER MANUFACTURER.

H. Norman Grieb, son of William G. Grieb, president of the Ajax Rubber Co., Inc., New York City, died in Paris, France, August 26, of pneumonia, following injuries received while flying. He went abroad in May, with the Yale medical unit, but on his arrival in France joined the French aviation

service. He had received his pilot's license and had been detailed to active duty at the front at the time of the accident. He was 22 years old. A brother, Harold, 20 years old, is also in France.

BRITAIN PERMITS IMPORTS OF RUBBER GOODS.

Since May 10, 1917, the importation of rubber manufactures into the United Kingdom has been prohibited. According to a recent cable from London it is understood that Great Britain is now prepared to license rubber imports to the extent of 15 per cent of the amounts imported in 1916. Application should be made to the Department of Import Restrictions, London.

United Kingdom imports for the calendar year 1916 were as follows: Waterproofed apparel, £9,518; boots and shoes, 250,746 dozen pairs, £438,196; insulated wire, £133,728; submarine cables, £7; automobile tires and tubes, £2,207,210; motorcycle tires and tubes, £93,173; cycle tires and tubes, £113,442; tires not specified, £10,040.

TENNIS SHOE PRICES.

The tennis shoe season ends early in September, and it has been the custom of the manufacturers of these goods to announce prices for the next season on September 1. This year, however, the United States Rubber Co. sent out new price-lists on August 1, and the other manufacturers were but a few days behind with their announcements.

With the enormous advance in costs of materials and labor, it was natural to expect a heavy advance over previous prices, and under the circumstances it was somewhat of a surprise that the advance was so moderate. In some of the finer lines, those wholesaling between \$1 and \$2.50 a pair, 10 to 25 cents was added, but on those selling at less than \$1 last September, 10 to 15 cents was the maximum advance.

It may be remembered that last year another list was sent out late in October which showed material advances over September, 1916, prices. The present price-list in some cases shows no advance over the October one, while in few cases are the prices more than 15 cents higher, and most of these cases are in lines which were not advanced in the October list.

Whether these August, 1917, prices, which are "subject to change without notice" will be supplanted by later announcements this fall, is impossible to foretell. Costs of materials are constantly increasing. Taxes are heavier. There are possibilities of further labor demands. If the manufacturers readjust prices later, as they did last October, there is no doubt that many, or all lines of tennis shoes will be marked up from August 1 prices.

ASBESTOS MINE DISCOVERED.

An asbestos mine has been discovered at Horsehide Springs, Rattlesnake Mountain, Wyoming, which promises commercial value, even though the mineral will have to be conveyed 150 miles, probably by motor trucks, to the nearest railroad. The find is reported by C. B. Stewart, secretary of the Utah Wool Growers' Association, whose automobile broke down at the location, thus leading to the discovery.

NEW LINE TO CALLAO.

W. R. Grace & Co., New York City, will establish a line of fast steamers between that city and Callao, Peru, by means of the Panama Canal, making the trip in 11 days. At present the best service between New York and Callao requires about 20 days, making allowance for a delay of from 4 to 6 days on the Canal Zone. The firm has a well organized branch in every port along the Pacific coast of South America, and will be able to supervise closely the work of discharging its own vessels.

News of the American Rubber Trade.

McGraw Annual Sales Conference.

THE McGraw Tire & Rubber Co. held its annual sales conference on August 2 and 3, all branch and district managers gathering at the home office, East Palestine, Ohio. Sales policies were carefully discussed and it was decided to continue the successful method of selling exclusively through jobbing channels. Increased warehouse facilities are being arranged for at important distributing centers to care for the growing demand for McGraw, Pullman, Imperial and Congress tires and tubes.

The executive changes in the company's personnel are as follows: R. E. Hayslett, formerly connected with the Timken Roller Bearing Co., has been made assistant to John Morgan, vice-president and treasurer. R. G. Nelson, formerly assistant sales manager, is appointed director of sales, assuming direct control over all general office and branch sales. F. C. Strayer has become Atlanta district manager.

RUBBER COMPANY DIVIDENDS.

The Hood Rubber Co. paid a quarterly dividend of $1\frac{3}{4}$ per cent on August 1 to stockholders of record July 26; also a 1 per cent dividend on August 15.

The Amazon Rubber Co. has declared a dividend of $3\frac{1}{2}$ per cent on preferred stock, payable September 1 to stockholders of record August 20.

The Ajax Rubber Co., Inc., has declared a regular quarterly dividend of \$1.50 per share, payable September 15 to stockholders of record August 31.

The B. F. Goodrich Co. has declared a dividend of $1\frac{3}{4}$ per cent on preferred stock, payable October 1 to stockholders of record September 21; also 1 per cent on common stock, payable November 15 to stockholders of record November 5.

The board of directors of the Pennsylvania Rubber Co. has declared a regular quarterly dividend of $1\frac{3}{4}$ per cent on preferred and $1\frac{1}{2}$ per cent on common stock, payable September 29 to stockholders of record September 15.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of shares of rubber manufacturing companies on August 25 are furnished by John Burnham & Co., 115 Broadway, New York City, and 41 South La Salle street, Chicago, Illinois.

	Bid.	Asked.
Ajax Rubber Co. (new).....	65	69
Firestone Tire & Rubber Co., common.....	115	118
Firestone Tire & Rubber Co., preferred.....	102	105
The B. F. Goodrich Co., common.....	48	49
The B. F. Goodrich Co., preferred.....	104	105
Goodyear Tire & Rubber Co., common.....	185	190
Goodyear Tire & Rubber Co., preferred.....	105	107
Kelly-Springfield Tire Co., common.....	44	48
Kelly-Springfield Tire Co., preferred.....	87	95
Miller Rubber Co., common.....	165	175
Miller Rubber Co., preferred.....	102	104
Portage Rubber Co.....	145	150
Swinehart Tire & Rubber Co.....	61	60
United States Rubber Co., common.....	61	62½
United States Rubber Co., preferred.....	105	109

PETLEY RUBBER COMPANY ABOUT TO OPERATE.

The Petley Rubber Manufacturing Co., notice of whose incorporation appears elsewhere in this issue, has purchased outright the entire machinery and equipment, together with all material, dies, molds, etc., of the Oldtown Rubber Co., of Xenia, Ohio, and these are being moved to Milwaukee, Wisconsin, where the Petley company will occupy the premises at 241-247

Oregon street. New machinery is being added to that purchased from the Oldtown company and operation at the Milwaukee plant will commence early in September.

L. M. Bickett, former superintendent of the Oldtown Rubber Co., together with D. A. Bickett, of the same company, have joined the Petley forces at Milwaukee.

THE MASON TIRE & RUBBER APPOINTMENTS.

John H. Diehl has been appointed general sales manager of The Mason Tire & Rubber Co., Kent, Ohio. Starting with The B. F. Goodrich Co. in 1894, he later served successively as manager of the Philadelphia and the Buffalo branches of that company. He joined the Portage Rubber Co., Akron, Ohio, at the time of its organization in 1912, as salesmanager, and has been with that organization in the position of manager of sales for the last five years.



JOHN H. DIEHL.

George C. VanVeen has been appointed manager of the new direct factory branch of the Mason Tire & Rubber Co., which has recently been opened at 2120 Michigan boulevard, Chicago, Illinois. He will also have charge of sales of Mason tires for the entire central district of the United States. He has been manager of the Kansas City branch since it was opened and his work there was so successful that he has been given the promotion to Chicago.

Mr. VanVeen started his business career in the automobile industry in New York City, but soon entered the tire field with the Ajax-Grieb Rubber Co., New York City, being located in the Middle West. He left this concern to enter the retail tire business in Detroit, Michigan, later selling out to become associated with the Mason company, whose business has shown splendid growth in the territory of which Mr. VanVeen has had charge, and the steadily increasing business is largely due to his energy and knowledge of the business.



G. C. VANVEEN.

H. C. Smith has recently been appointed manager of the Kansas City branch of the Mason Tire & Rubber Co., succeeding Mr. VanVeen. Mr. Smith has been a salesman with the Kansas City branch since it was established, and his advancement to the position of branch manager is due to his very successful record. He has had many years of successful experience in the rubber business. For five years he was with The B. F. Goodrich Co., Akron, Ohio, and knows the trade in the West and Southwest thoroughly, particularly in the states of Missouri, Kansas, Nebraska, Oklahoma, Texas, New Mexico, Colorado and Wyoming, and this acquaintance, together with his experience in the Kansas City branch, makes the appointment



H. C. SMITH.

specially appropriate.

MAJOR OSTERRIETH AND HIS CANINE PAL.

WHEREVER the Belgian Commission has been entertained with acclaim in America, the commanding figure of Major Leon Osterrieth, former rubber merchant of Antwerp, has arrested the attention of every onlooker. Of towering stature, huge physique, distinguished bearing, and in facial characteristics somewhat resembling the late King Edward VII of



TWO BELGIAN VISITORS TO AMERICA.

England, he stood head and shoulders above all the other members of the Commission and was the first to be seen in a crowd. Few except those near him, however, noticed the wire-haired fox terrier that was seldom absent from his side, yet Major Osterrieth declined to accompany the mission to America when refused permission to take "Nellie" with him. The Belgian Government gave in, however, the dog is on the trip and so comes to light a touching little human interest story of canine devotion and a master's appreciation.

"Nellie" first went to Belgium with an English army officer during the early days of the war. The Englishman was killed, and for weeks "Nellie" wandered aimlessly among the Belgian and English. Time after time officers and soldiers sought to make her a pet but in vain. "Nellie" was what dog fanciers call a "one man dog" until she ambled by the major's tent one day and heard his deep voice proffer a kindly invitation to share his meal. For the first time since the death of her old master "Nellie" displayed friendliness and accepted the bone he offered her. Then she disappeared.

During the German attack that night the major forgot "Nellie." Not until the early hours of the morning was the attack repulsed. Then as the major was settling down to sleep in his make-shift cot he heard a piteous whine outside the tent. He got up and looked out.

There was "Nellie." A German bullet had almost torn her right shoulder off. The big scar can be seen there today. Tenderly did the major take the dog in. He bound up the wound and gave "Nellie" a place in his quarters. Since then the dog has never left him, and his affection for his canine pal in some of the bitterest battles in the war can only be measured by his willingness to sacrifice a great honor to prevent their separation.

DOMINION RUBBER SYSTEM PROMOTIONS.

H. R. Willans, druggists' sundries department, Montreal branch, has been transferred to the Ottawa branch as salesman for druggists' sundries and waterproof clothing.

Alfred E. Cox succeeds Mr. Willans at Montreal.

L. A. Blanchard has joined the staff of the Montreal branch and will develop trade for Rinex soles and heels among shoe manufacturers.

PERSONAL MENTION.

Among the names on the Birthday Honors List of the King of England was that of Sir Frederick Smith, Bart., J. P., who has been created a Baron of the United Kingdom. Sir Frederick is chairman of Chas. Macintosh & Co., Limited, which firm he joined about 25 years ago. He is also chairman of the New Liverpool Rubber Co., Limited, the North Borneo Rubber Co., Limited, and is on the boards of the Lancashire and Yorkshire Bank and of the Garswood Hall Colliery Co. In the year 1912 he was created a baronet.

Thomas A. Aspell, who has been manager of the truck tire department at the New York City branch of The B. F. Goodrich Co., Akron, Ohio, has been placed in charge of the specification work this company is doing for the United States Government. While this duty will require his frequent presence in Washington, D. C., he proposes to make his headquarters in Akron.

J. E. Powers, who for the last eight years has been in charge of the truck tire department of the Buffalo (New York) branch of the B. F. Goodrich Co., Akron, Ohio, has been appointed to a similar position at the New York City branch of the same company.

Victor Van Der Linde, recently returned from a tour through Norway, Sweden, Finland and Russia doing special technical work for The B. F. Goodrich Co., Akron, Ohio, has great confidence that the Russian democracy will do its full share in the struggle against German autocracy. Mr. Van Der Linde was in Petrograd when the revolution took place, and had an exceptional opportunity to observe its immediate causes and effects. The American commission, headed by Elihu Root, he says, put new confidence into the Russian people. The army is now eagerly resuming the offensive and if an adequate supply of munitions, food and clothing be maintained by the workingmen, will fight as never before. Europe generally, he says, is much impressed by the entry of the United States into the war, yet it is his personal opinion that the war cannot end under two years' time.

Albert F. Hill has severed his connections with the Rubber & Guayule Agency, Inc., and on and after October 1 will be connected with the firm of Wallace L. Gough & Co., 15 William street, New York City.

Fred Haupt, formerly vice-president of the Ten Broeck Tyre Co., Louisville, Kentucky, has succeeded to the presidency, filling the vacancy created by the death of H. L. Lewman.

Arthur H. Clark, formerly of the Locomotive Rubber Co., Williamsport, Pennsylvania, has been made assistant superintendent of the St. Louis, Missouri, plant of the Goodyear's Metallic Rubber Shoe Co.

C. W. Hardin has been appointed manager of mechanical sales of the Republic Rubber Co., Youngstown, Ohio.

R. L. Devoe, for several years branch manager at Chicago, Illinois, of the Dayton Rubber Manufacturing Co., and more recently assistant sales manager at the home plant at Dayton, Ohio, has been made sales manager. It is claimed that the 1918 expansion plans will place this company among the more prominent rubber manufacturing plants of the country.

A. Boyd Cornell, secretary of the Empire Rubber & Tire Co., Trenton, New Jersey, has tendered his resignation. He started in the rubber business immediately after graduating from Princeton in 1901, and worked in every department, thereby gaining practical knowledge of the business. Several propositions are being considered, but his future plans are not yet decided upon.

Harry R. Nason has been chosen secretary of the Empire Rubber & Tire Co., Trenton, New Jersey, succeeding A. Boyd Cornell, resigned.

John F. Bresnahan has been appointed general sales and advertising manager of the American Chicle Co., New York City.

NEW OFFICERS FOR WESTINGHOUSE.

The board of directors of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, recently elected officers for the ensuing year as follows:

Guy E. Tripp, chairman of board; E. M. Herr, president; L. A. Osborne, Charles A. Terry, H. P. Davis, H. D. Shute, H. T. Herr, Walter Cary, vice-presidents; T. P. Gaylord, acting vice-president; James C. Bennett, comptroller and secretary; Warren H. Jones, assistant secretary; H. F. Baetz, treasurer and assistant secretary; S. H. Anderson, assistant treasurer and assistant secretary; L. W. Lyons, assistant treasurer; F. E. Craig, auditor; W. B. Covil, Jr., and Wm. J. Patterson, assistant auditors.

In addition to its regular dividends, on July 31 the Westinghouse company paid a special Red Cross dividend of 25 cents per share on all capital stock outstanding, both preferred and common.

STUNGO-RADIUM RUBBER CO. WILL OPERATE SOON.

As a result of action taken by a dissatisfied stockholder the affairs of the Stungo-Radium Rubber Co., Washington, Pennsylvania, were placed in the hands of a temporary receiver on July 20. After a four days' hearing, beginning July 24, before Judge Irwin, of Washington County, however, the receivership was dismissed, it having been shown that the affairs of the company are in excellent condition, but that the inability of one stockholder absolutely to dominate the policy of the company had been the cause of some internal dissension which had been nearly eliminated.

The company has available assets in plant, cash and accounts receivable exceeding \$500,000, and liabilities of less than \$75,000, of which \$50,000 is a mortgage on which no payments are required until 1920. A large portion of the machinery is already in the plant, the first unit of which will be in operation about November 1, with a capacity of 500 tires daily. Equipment for a second unit of the same size is already being manufactured, as the company now has sufficient orders for operation at full capacity for more than a year.

The officers of the company are: Floyd Rose, president; R. P. McDonald, secretary and treasurer; Floyd Rose, Bert S. Shafer, John W. Rinehart, R. P. McDonald and Joseph Stungo, directors. The first three directors named comprise the executive committee now in control of the company's affairs.

MADERO SUED FOR PATENT INFRINGEMENT.

A suit has been filed in the Federal Court, San Antonio, Texas, against Salvador Madero and others, by Ferdinand Ephraim, of San Francisco, California, for damages due because of infringement of Mexican Patent No. 4,079, granted Ephraim October 29, 1904, for a process of extracting gum or rubber from any rubber-bearing plant or shrub. This suit was filed in Texas because the courts of Mexico are closed, and Madero is a resident of San Antonio. The plaintiff claims that for a number of years past Compania Explotadora Coahuilense, Compania de Hule Australia and Compania de Las Delicias have been and now are corporations foreign to the United States of America, namely, corporations organized and existing under and by virtue of the laws of Mexico; that Salvador Madero, Francisco Del Hoyo and Antonio Villalbo, Sr., are associated as copartners under the name of Salvador Madero & Co., and that Salvador Madero is the general manager or agent of these corporations. The claim is made that these firms have, without consent of the patentee, used this patent in the production of upwards of 30,000,000 pounds of rubber from the guayule shrub, and have received from the sales of this rubber, principally in the United States, a sum exceeding \$8,000,000. Plaintiff asks judgment for that amount, besides costs of suit, counsel fees, etc.

The result of this suit will be awaited with interest by the rubber trade of this country and Europe.

PENNSYLVANIA RUBBER CO. INSURES EMPLOYEES.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, has arranged for the life insurance of its men and women employes, on a graduated scale, depending on the length of employment. The payments of the premiums are made by the company. Those who have been employed one full year or less, are insured for \$300; two full years or over, \$500; and for each full year over two, an increase of \$100 annually until the maximum of \$1,000 is reached, these sums payable to the beneficiaries, at the death of the employes thus insured.

NEW TIRE VALVE PATENT.

On May 15, 1917, patent No. 1,226,608, for Tire Valve, was issued to the Scoville Manufacturing Co., assignor of John Lines, of Waterbury, Connecticut. The application for this patent was filed in the Patent Office on October 18, 1897, but through an unusual situation in the Patent Office was not issued until May 15 of the present year. The owners of the patent, the Scoville Manufacturing Co., and A. Schrader's Son, Inc., who are licensees under the patent, were apparently under the belief that the patent had been actually issued, until upon investigation it was found that the issue had not taken place. This unusual situation apparently occurred through no fault of the Scoville company or its licensee, and upon the facts being presented to the Patent Office the patent was duly and legally issued.

THE EAGLE RUBBER CO. EXPANDS.

The new factory building of the Eagle Rubber Co., Ashland, Ohio, shown herewith in a bird's-eye view, is constructed mainly of brick and steel, with a floor space of approximately 25,000 square feet and track frontage of 146 feet. It will be ready for occupancy October 1. Toy balloons are the principal product



of the Eagle company and this addition to its plant will allow for an output of 200,000 of these balloons per day, permitting as well the manufacture of various other items contemplated for the near future.

STANDARD MALKONITE.

Standard Malkonite is a new product that is recommended by the Standard Malkonite Co., Arrott Building, Pittsburgh, Pennsylvania, for a variety of purposes. It may be used in the manufacture of puncture-proof tires for automobiles, motor-cycles and bicycles. It is said to be adaptable as an insulator for electric wires, conduit tubing, switch-boards, signal insulations, and battery jars. Also it is claimed to be an available material for typewriter platens, ten pin balls, acid proof jars, soles and heels.

NEW INCORPORATIONS.

Avalon Rubber Manufacturing Co., The, July 13 (Ohio), \$50,000. J. F. Hower (president and general manager); L. B. Turner (secretary); W. W. Spears (treasurer). Principal office is in Akron, and the factory will be located at Barberton—both in Ohio. To manufacture molded rubber goods, including the more popular articles in the molded mechanical line.

Bay State Insulated Wire and Cable Co., The, July 21 (Boston), \$300,000. J. H. H. McNamee, M. M. L. McNamee—both of 600 Blue Hill avenue; H. E. McNamee, 1509 Blue Hill avenue, M. J. Cashman, 1 Arborway Court—all in Boston, Massachusetts; J. S. Cashman, 643 Canal street, Manchester, New Hampshire. To manufacture and deal in wire and cable products, and articles made in whole or in part of rubber, leather, etc.; also to manufacture and deal in machinery or electrical or hardware supplies.

Century-Plainfield Tire Co., August 17 (New Jersey), \$100,000. C. P. L. Huston, J. D. Grant and W. F. Hart—all of 902 North avenue, Plainfield, New Jersey, which is the address of the principal office of the company. To manufacture, buy, sell, repair, convert, alter, let or hire and deal in tires and inner tubes for tires of every class and description, for use on motor vehicles and other vehicles of every kind, mechanical rubber goods, rubber packings, rubber appliances, and any and all articles of every name, nature and description wherein or in connection with which rubber or rubber compounds or any by-products of rubber are or may be used, etc.

Community Rubber Co., July 26 (Indiana), \$3,150. H. A. Geller (secretary), 167 So. Broad street; E. L. Royall (director), 22 Brynmawr avenue; R. J. Stokes, 833 W. State street—all in Trenton, New Jersey.

Consumers Tire & Tube Co., The, August 3 (Wisconsin), \$10,000. W. S. Mason, G. L. Blum and G. F. Blum. Principal office located at Eau Claire, Wisconsin. To buy and sell automobile tires and accessories.

Continental Tire & Rubber Co., The, August 20 (Delaware), \$300,000. C. L. Rimlinger, F. A. Armstrong—both of Wilmington, Delaware, and C. M. Egner, Elkton, Maryland. Principal office within the State of Delaware is with the Corporation Trust Co. of America, 486 du Pont Building, Wilmington, Delaware. To manufacture, produce, buy, sell, import and generally deal in rubber and gutta percha.

Dunbar-Daggett Co., The, July 31 (Massachusetts), \$10,000. J. F. Dunbar (president); H. A. Daggett (treasurer)—both of 89 Mt. Vernon street, Boston, Massachusetts, and W. A. Thibodeau, Stoneham, Massachusetts. To manufacture and deal in crude rubber or any of its allied products.

Ideal Wheel & Tire Co., August 4 (New Jersey), \$50,000. M. Munzer, 430 E. 141st street, New York City; H. Small, 547 S. 12th street; J. H. Dwork, 217 W. Kinney street—both in Newark, New Jersey, which is the address of the principal office of the company. To manufacture automobile wheels and tires.

International Fibre Co., The, August 14 (New Jersey), \$200,000. Peter E. Wurfflein, William Keegan, LeRoy W. Skelton—all of Trenton, New Jersey. To make, purchase, and sell rubber and rubber fibre soles, heels, mats and all goods of which rubber or fibre are component parts, etc.

Legeim Rubber Co., July 25 (New Jersey), \$25,000. A. McMahon, C. B. Hermans, and F. Losche—all of 1 Montgomery street, Jersey City, New Jersey. Principal office located at 519 Bergen avenue, Jersey City, New Jersey. To manufacture, purchase and sell rubber goods of any and every kind, including automobile tires, tubes and shoes, and all goods of which rubber is a component part.

Lockwood Compound Co., August 4 (Massachusetts), \$20,000. A. Millen, 44 Elm avenue, Wollaston; R. Litchfield, 12 Worcester square, Boston; J. A. Hay, 381 Talbot avenue, Dorchester—all

in Massachusetts. Principal office, Boston, Massachusetts. To manufacture and deal in all products and by-products of rubber and rubber compounds.

Mogul Tyres, Inc., of New England, August 7 (Delaware), \$250,000. C. A. Cole, Hackensack, New Jersey; A. R. Oakley, Pearl River, and Wm. E. Schiels, Jr., 153 Division avenue, Brooklyn—both in New York. The office of the corporation within the State of Delaware is with the Registrar and Transfer Co., 900 Market street, Wilmington, Delaware. To manufacture and deal in automobile tires, goods, wares and merchandise.

Multi-Life Tube & Rubber Co., Inc., August 13 (New York), \$90,000. C. W. Blanford, 452 Fifty-sixth street; C. D. Quick, 25 Clinton street, and I. D. Hamilton, 452 Fifty-sixth street—all of Brooklyn, New York. To manufacture rubber tubes and tires.

Muskogee Tire Repair Co., July 18 (Oklahoma), \$1,400. R. Y. Edwards, G. F. McIntyre and C. M. Cagle—all of Muskogee, Oklahoma, where the principal office is located. To buy, sell, and deal in all classes of automobile tires and to repair the same.

Pan-American Rubber Co., The, July 2 (Wisconsin), \$200,000. Joseph Huebner, Sr., (president and general manager); Joseph Huebner, Jr., and Louis E. Fichaux—all of Milwaukee, Wisconsin. Principal office, 409-411 Third street, Milwaukee, Wisconsin. To deal in rubber and all goods and products of which rubber shall be a component part and to operate processes for the manufacture of rubber, etc.

Petley Rubber Manufacturing Co., July 20 (Wisconsin), \$100,000. J. R. Petley (president and treasurer); F. J. Edwards (vice-president); L. S. Pease (secretary); L. M. Nahin. Principal office, Milwaukee, Wisconsin. To manufacture a complete line of molded mechanical rubber goods, rubber heels, etc.

Robertson Rubber Co., Inc., August 13 (New York), \$5,000. J. A. Lynch, West New Brighton; John Aigeldinger, West New York, and John Robertson, Union Hill—both in New Jersey. To manufacture rubber goods of all kinds.

Rotary Tire Service Co., June 24 (Michigan), \$15,000. E. W. Stuber, 24 Garfield avenue; N. G. Currie, 38 Hanover street; H. G. Baker, 119 Willis avenue, West; W. N. Warren, Holmcroft, Grosse Isle—all in Detroit, Michigan. Principal office, 759 Cass avenue, Detroit, Michigan. Buying, selling and repairing automobiles, acquiring and maintaining a gasoline and lubricating oil supply station.

Shenango Tire Co., Inc., August 10 (Delaware), \$300,000. W. A. McCoy, Pittsburgh, Pennsylvania; W. I. N. Lofland, Charles H. Jones—both of Dover, Delaware. Principal office within the State of Delaware is with the Capital Trust Co. of Delaware, Dover, Delaware. To make and deal in auto tires.

Sterns Tire & Tube Co., July 6 (Iowa), \$100,000. A. A. Schneiderhohn (president and secretary); P. Simones (vice-president); G. J. Timmerman (treasurer). Principal office, Dubuque, Iowa. Manufacturing, jobbing and wholesaling auto tires and vehicles.

Sternwear Tire Sales Co. of Minnesota, August 6 (Delaware), \$150,000. G. L. Rimlinger, M. M. Clancy—both of Wilmington, Delaware; C. M. Egner, Elkton, Maryland. The office of the corporation within the State of Delaware is with the Corporation Trust Co. of America, Dupont Building, Wilmington, Delaware. To manufacture and deal in automobile tires, tubes, and particularly the "Sternwear Inner Tube."

Sternwear Tire and Tube Co. of Oklahoma, July 9 (Oklahoma), \$60,000. C. F. Andersen, F. H. Grant and W. MacRae—all of Oklahoma City, Oklahoma. Principal office, 602 N. Hudson street, Oklahoma City, Oklahoma. Manufacturing, wholesaling and retailing automobile tires and tubes and automobile accessories.

Watkins Tubeless Air Cooled Auto Tire Co., August 13 (Delaware), \$1,000,000. T. C. Watkins, Ingram; W. Burnside, Pitts-

burgh—both in Pennsylvania; M. Howells, Orrville, Ohio. The office of the corporation within the State of Delaware is with the Capital Trust Co. of Delaware, Dover, Delaware. To manufacture and deal in automobile tires and tubes, and goods manufactured from rubber.

Wheeler Rubber Co., The, July 16 (Nebraska), \$25,000. A. E. Wheeler, M. Wheeler, R. E. McLeester. Principal office, Omaha, Nebraska.

LEE TIRE COMPANY IN NEW YORK OFFICES.

The general offices of the Lee Tire & Rubber Co., including all branches of the company's business except the production department, are to be moved from present quarters at the Conshohocken, Pennsylvania, factory to New York City. By October 1 the sales, executive and accounting forces will be installed in New York headquarters and the opening in New York of a large branch service station for the convenience of dealers in the vicinity and New England is also contemplated. These important changes will aid in the greatly increased output of Lee tires promised for next season.

LAUNCHING OF LONG-WEAR TIRES AND TUBES.

The new factory of The Long-Wear Rubber Co., Elyria, Ohio, is now completed and most of the machinery installed, the total cost being \$100,000. Within another month the company's product—automobile tires and tubes—will be on the market. At the last meeting of the board of directors, officers were elected as follows: William Seher, Lorain, Ohio, president; J. E. Murbach, Elyria, vice-president; I. N. Barber, Chicago, Illinois, secretary; W. E. Brooks, Elyria, treasurer; Charles J. Hodges, Elyria, general manager. Other directors are Henry B. Kishman, Vermilion, Ohio; J. J. Dauch, Sandusky, Ohio; C. H. Whitney, Oberlin, Ohio. B. W. Rote, Akron, Ohio, is factory manager.

CONVEYOR BELTING STRONGER THAN STEEL CABLE.

About the middle of June there were stored at the docks at St. John, New Brunswick, thousands of cases of shells waiting to be shipped for use abroad in the present war. So great was this weight that the wharf collapsed, not toppling over but simply



RUBBER CONVEYOR BELT HOLDING IMMENSE WEIGHT.

dropping straight down under the load. Over this warehouse was a grain conveyor having a rubber conveyor belt. When the warehouse collapsed this grain conveyor remained suspended in the air by the strength of the belt, which carried the weight of the conveyor, and when the second tide caused a further crash this tower slid along the belt until it reached Shed No. 5, as shown in the photograph. The authorities did not consider the belt sufficient to hold this great weight, and provided heavy steel cables to prevent further collapse. After these cables were placed the belting was cut, but when the next tide came in the cables broke and the conveyor came down with a crash. Rarely, if ever,

has there been a more severe test for a belt of this kind, or, in fact, almost any kind of a belt, and that it stood the test speaks volumes for the quality and workmanship of the manufacturer, the Canadian Consolidated Rubber Co., Limited, of Montreal, Canada.

TRADE NOTES.

Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, has made the gift of a fellowship of \$400 for research work in physics to the University of Wisconsin, Madison.

The Canton Rubber Co., Canton, Ohio, has surrendered its certificate of authority to do business in the State of New York as a corporation, and the products of the company will in future be handled in that section exclusively by Lloyd P. Jones, 240 Broadway, New York City.

The United States Rubber Co. has bought 40,000 shares of its own stock and turned them over to employees on a profit-sharing plan.

The Federal Rubber Co., Cudahy, Wisconsin, held its annual picnic on August 18 at Waukesha Beach. There was an attractive program of athletic events and a flag-raising ceremony.

The Rubber Regenerating Co., Mishawaka, Indiana, has employed a number of women to take the places of men expected to be called under the draft law. It is said that the services of the women, who are doing regular routine work, are proving highly satisfactory.

To the McCoy-Nolan Supply Co., Milwaukee, Wisconsin, has been awarded the contract to supply the local fire department with 5,000 feet of 2½-inch double-jacketed fire hose; also the contract for 1,000 feet of 3½-inch fire hose.

The semi-annual style conference of the clothing department of the United States Rubber Co. was held at Grand Pacific Hotel, Chicago, Illinois, the first part of August, when a wonderfully attractive line of clothing, was shown for the examination of the buyers of the branch stores.

The United States Rubber Co. of California arranged a very attractive display of druggists' sundries at the recent convention of the California Pharmaceutical Association in San Francisco, this being the only exhibit of druggists' rubber goods. Mr. Van Inwagen, manager of that department, reports that the druggists evinced much interest in the display.

While the word "Substitute" has a definite and well-understood meaning in the rubber manufacturing industry, the term is undoubtedly suggestive of adulteration. The Stamford Rubber Supply Co., Stamford, Connecticut, has therefore adopted for its vulcanized vegetable oil products the term "Rubber Factice."

The Traun Rubber Co. has recently removed its offices to 239-243 Fourth avenue, New York City.

The Rubber Regenerating Co., Naugatuck, Connecticut, is erecting a new three-story brick warehouse, 320 by 66 feet, which will be used for manufacturing as well as warehouse purposes. The company is also building a 200- by 62-foot warehouse at its factory at Mishawaka, Indiana.

S. Birkenstein & Sons, scrap rubber dealers, Chicago, Illinois, have recently purchased from fifty to sixty thousand square feet on North avenue and Hawthorne street. No definite plans for building on this property have yet been formulated.

The Keystone Tire & Rubber Co., Inc., New York City, is now operating 32 stores and at its annual meeting on August 1 the board of directors resolved to continue opening stores until a maximum of 100 is reached. There were no new elections.

St. Louis, Missouri, appears to be on the very threshold of industrial opportunity. The "St. Louis Chamber of Commerce Bulletin" of late has an unusually optimistic tone and may prove an inspiration to new manufacturing business seeking a promising site.

HENRY N. MABERY.

HENRY NELSON MABERY, treasurer of The Savage Tire Corp. of San Diego, California, was born in Winchendon, Massachusetts, and educated in the Murdock Schools in that



H. N. MABERY.

town, which is noted for the extent of its wood working industries. In his youth he acquired a practical knowledge of every branch of the wood working machinery business, first with Baxter D. Whitney & Sons Co., of Winchendon, and later with the S. A. Woods Machine Co., of Boston, Massachusetts, and he had already assumed a prominent position in this industry when the state of his wife's health prompted his moving to a less rigorous climate. Twelve years ago

he took up his residence at Los Angeles, California, where for ten years he engaged in the real estate business, and the beautiful sub-division between Los Angeles and Hollywood, named Mabery Heights, is a permanent testimonial to his development work. In August, 1915, the Savage Tire Co., of San Diego, California, secured the services of Mr. Mabery for some special organization work, and the promptness and thoroughness with which this work was performed led eventually to his being appointed to a prominent position in the Savage organization, and he is now general superintendent of the Savage Tire Co., and secretary and treasurer of The Savage Tire Corp. During the period of Mr. Mabery's supervision the business of the company has grown so as to require very material enlargement, the addition of many modern machines and the installation of the latest manufacturing methods, and much of this is due to his business insight, activity and enterprise.

GOODYEAR PROMOTIONS.

The Goodyear Tire & Rubber Co., Akron, Ohio, has made the following changes in its branch managers:

B. S. Waterman, formerly branch manager at Boston, Massachusetts, has been placed in charge of the solicitation of manufacturers' business in all departments for the New England district.

W. A. Hazlett, formerly manager of the Detroit, Michigan, branch, has been appointed manager of the Detroit district.

P. E. Ammon, who has been special dealers' representative of the Detroit district, becomes assistant to Mr. Hazlett.

H. G. Norris, formerly manager at Toledo, Ohio, has been promoted to the management of the Detroit branch.

G. H. Hilbish has assumed charge of the Toledo branch, and is succeeded at Saginaw, Michigan, by W. D. McFarland, formerly a salesman in that territory.

F. W. Telford, who has been manager at Des Moines, Iowa, has been assigned to the manufacturers' division at Detroit.

R. E. Greene, former assistant manager at Minneapolis, Minnesota, succeeds Mr. Telford at Des Moines.

UNITED STATES RUBBER CO. APPOINTMENTS.

Recent appointments of the United States Rubber Co., New York City, include the following in the branch store department:

Arthur W. Lawrence is made assistant to manager.

George E. Goodwin is promoted to supervisor of clothing and druggists' sundries.

Charles A. Blake becomes supervisor of footwear. He will continue to act in an advisory capacity on salesmen's operations.

T. B. Goodloe is now supervisor of tires.

W. C. Peterson, supervisor automobile accessories; and

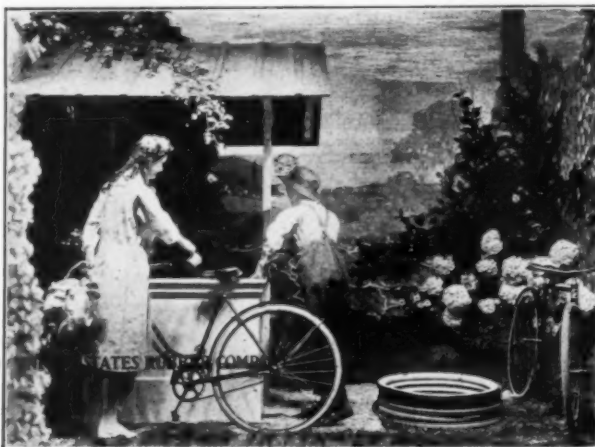
E. P. Cole, supervisor of mechanical goods.

PREFERRED STOCK FOR FEDERAL RUBBER EMPLOYEES.

As the result of requests from many of the employees of the Federal Rubber Co., of Cudahy, Wisconsin, for the privilege of purchasing an interest in the company, action recently was taken by the board of directors whereby a certain amount of second preferred stock of the company might be acquired. This stock, which is dividend-bearing, will, by reason of the limited number of shares available, be offered primarily to those employees holding positions of responsibility and whose terms of service with the Federal company cover a considerable period of time.

A BICYCLE TIRE WINDOW DISPLAY.

The United States Rubber Co. has in its building, 1790 Broadway, New York City, some of the best show windows in the city, both in the arrangement of the windows and the location for exhibiting the class of goods it carries. Last month all of its windows were fitted with tires of various kinds and grades made by the company, and the arrangement of the windows certainly proved that whoever had this in charge was a



real artist. Reproduced here is the display in one of the windows, which reminds one of the song, "The Old Oaken Bucket," it being intended to advertise bicycle tires. There was an ingenious blending of painted background with real flowers and shrubbery. Two bicycles were shown, together with tires having a variety of treads made by this company. Two children were represented as resting from their pedaling and quenching their thirst at the old well, and no doubt thousands stopped to study this and incidentally realized that the company manufactures quite a variety of bicycle tires.

The strength of France, commercially and financially, is briefly outlined in a booklet, "France and America, Their Mutual Interests and Obligations," published by the Guaranty Trust Co., of New York City, and which will be read with interest by exporters.

PEARCE ARROW TIRE COMPANY CHANGES ITS NAME.

At a meeting held on August 20 the stockholders of the Pearce Arrow Tire & Rubber Manufacturing Co. voted to change the name to Pearce Rubber Corporation and to increase the capital stock to \$1,000,000. The company now has ample working capital, in addition to paying for new machinery and equipment for its new factory, which will have a capacity of 1,000 tires per day.

TRADE NOTES.

The frequently recurring rumor, with ever-varying details, that the Ford Motor Co., Detroit, Michigan, is to manufacture tires for Ford cars remains without foundation in fact. The extensive building operations now in progress in the River Rouge district led to the belief that a separate tire making company was to be organized to conduct this enterprise on a separate basis, but THE INDIA RUBBER WORLD is advised that the Ford company does not contemplate increasing the size of its rubber department at the present time. Serious consideration has not been given to this matter, due to the enormous expansion of other departments with which the company is more familiar. However, experiments with tires and molded goods still continue and a limited quantity is turned out daily.

The Aero Cushion Tire Co., San Jose, California, has come under new management and is turning out tires to the full capacity of the plant. The new officers and directors are as follows: B. A. Herrington, president; A. P. Marston, vice-president; E. L. Sherbondy, superintendent; W. P. Wholtheter, secretary; J. J. O'Shannessy, general sales agent.

Mention has previously been made in THE INDIA RUBBER WORLD of the complaints of several rubber companies against unfair railroad freight classification. The hearing in three of these cases assigned for September 22 at Akron, Ohio, has been postponed by the Interstate Commerce Commission, Washington, D. C., to a date to be hereafter fixed. The companies concerned are as follows: The Goodyear Tire & Rubber Co. v. The Akron, Canton & Youngstown Railway Co. *et al*; Kelly-Springfield Tire Co. v. The Akron, Canton & Youngstown Railway Co. *et al*, and The Batavia Rubber Co. v. Erie Railroad Co. *et al*.

The Consumers Service Tire & Equipment Co., Fulton, Illinois, incorporated under the laws of South Dakota, November 21, 1916, with a capital stock of \$5,000,000, has changed its name to Lincoln Highway Tire Co.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, announces the opening of a new branch and service station at 212-14 S. Pinckney street, Madison, Wisconsin, on or about September 1.

The Osborne Engineering Co., of Cleveland, Ohio, has planned a factory for The Ideal Tire & Rubber Co., to be located at Warren Road, Cleveland, on a 75-acre tract. The plant will have three stories and basement and it is reported will cost \$150,000.

It is estimated now that the Mid-Continent Tire Manufacturing Co., Wichita, Kansas, will commence operation on September 10. Three Akron, Ohio, rubber men—W. E. Greer, R. E. Riley and B. L. Pontius—are to have charge, respectively, of the factory management, mill room and tube department.

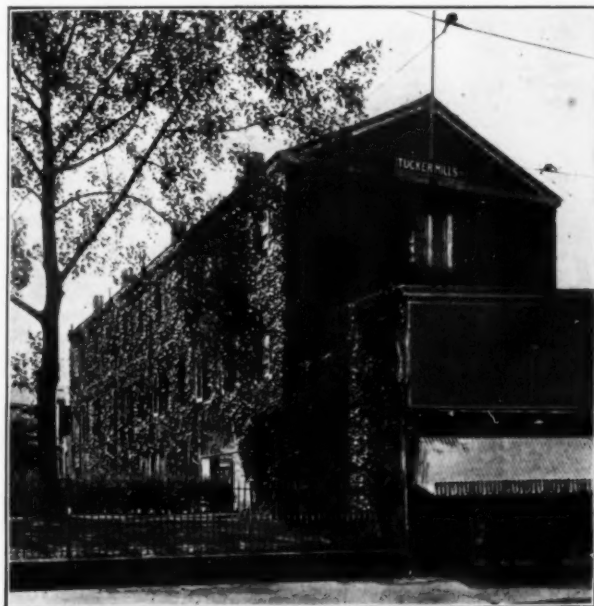
The Johnstone Tire Co., of La Porte, Indiana, will manufacture a semi-solid tire adapted for delivery wagons. The tire, which is the invention of Samuel Johnstone, for whom the company has been named, carries a 10,000-mile guarantee.

The Sterling Tire Corp., Rutherford, New Jersey, which succeeded the Rutherford Rubber Co. last March, held its semi-annual convention of managers and salesmen on July 27 and 28, a feature of the occasion being the presentation of medals and prizes to members of the force for their accomplishments during the first six months of the year.

THE NEW FACTORY OF TUCKER MILLS, INC.

Such rapid progress has been made by Tucker Mills, Inc., Baltimore, Maryland, that the company has moved into new and larger quarters. The accompanying illustration shows the first plant, now outgrown. This business was started with six looms in April, 1916, as the Monumental Manufacturing Co., and was incorporated under the laws of Maryland in April, 1917, as Tucker Mills, Inc. Carded peeler fabric for cord tire construction has been the exclusive product, and so great has been the demand that, with the new facilities and machinery to be in operation in October, the output will be increased to 15,000 pounds weekly.

The officers of the company are: E. D. Hewins, president, Boston, Massachusetts; J. E. Tucker, vice-president and general manager, Baltimore, Maryland; Albert A. Blakeney, treasurer,



Baltimore, Maryland. All are men of long experience in the cotton duck and tire fabric trade. The product of the mill is sold through E. D. Hewins, 72 Lincoln street, Boston, Massachusetts.

OHIO RUBBER SHIPPERS ORGANIZE.

The Northwestern Ohio Rubber Shippers' Association has been formed to enable those firms engaged in shipping crude rubber and rubber products in the Akron territory to act jointly in handling the traffic problems that are continually arising and in which all have a common interest. It is also hoped that this association will furnish a convenient medium of cooperating with the railroads in effecting changes and improvements in traffic conditions.

The present Akron members include The B. F. Goodrich Co., Firestone Tire & Rubber Co., The Goodyear Tire & Rubber Co., The Miller Rubber Co., and General Tire & Rubber Co. Other members are the Portage Rubber Co., Barberton, Ohio; McGraw Tire & Rubber Co., East Palestine, Ohio; Marathon Tire Co., Cuyahoga Falls, Ohio; The Republic Rubber Co., Youngstown, Ohio.

The officers are as follows: F. C. Van Cleef, president; E. C. Knox, vice-president; E. L. Tragesser, treasurer; executive committee, R. G. Kreidler, chairman, E. L. Morgan, H. S. Bryant, E. C. Knox, E. L. Tragesser, A. C. Redman, L. H. Ley, W. D. Morris.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

PERHAPS the latest and most reliable statistics regarding Akron's great rubber industry were given in an article for the July issue of "Export American Industries," by Vincent S. Stevens, secretary of the Akron Chamber of Commerce. This article entertainingly reviews the phenomenal growth of this "city of opportunity," its present variety of industry and extent of civic and social work and improvement. It is pointed out that in addition to its gigantic rubber goods factories, Akron has one of the largest cereal mills in the United States, very extensive clay product plants, large book publishing houses, extensive furnace factories, important agricultural implement interests, and one of the largest fishing tackle factories in the world.

Regarding the rubber industry, Mr. Stevens writes:

The first rubber factory in Akron was established in 1869, in a building 40 by 100 feet in size, with 25 employees. Akron at that time was a town of 10,000 inhabitants with a somewhat limited reputation as a promising town of cheap canal transportation. This pioneer company has grown to be the largest rubber factory in the world, employing at the present time 19,000 persons and covering a floor space of 90 acres. It is said that this company makes no less than 8,000 different and distinct articles. Other rubber companies have multiplied until there are now 24 active companies in Akron, with a combined output of 50,000 tires and an equal number of tubes per day, besides immense quantities of rubber clothing, boots and shoes, hose, belting, surgical and druggists' goods, and an almost innumerable variety of other hard and soft rubber articles. These companies have an aggregate capitalization of \$171,000,000, and employ a total of 55,000 persons. Of the total of 120,000 tons of crude rubber imported into the United States in 1916, 60,000 tons were consumed by the Akron factories. Of the estimated demand of 20,000,000 tires needed this year for the 4,000,000 automobiles in use in this country, 15,000,000, or 75 per cent, will be made in Akron.

Labor Day for Goodrichites will be a dizzy round of pleasure, according to the plans for the second annual field day of The B. F. Goodrich Co. The varied activities will appeal to all tastes, and there will also be novel features, such as a "secret" hand-shaker, who will pass \$10 to the fiftieth person shaking hands with him during the day. The program of events includes the following:

Folk Dances—Russian, Macedonian, Croatian, Lithuanian, Italian Tarantella; fencing exhibition; tableaux and national dances; soccer—Goodrich "Bearcats" vs. Goodrich "Tigers," prize of \$27.50 to winning team; numerous track and field events for men, and special events for women, with money prizes for each event; horseshoe pitching contest, prize of \$10 to the winner; tennis singles and doubles for both men and women, \$5 prize; cricket—Goodrich "Eagles" vs. Goodrich "Hawks," prize of \$27.50 to winning team.

The Goodyear Tire & Rubber Co. will also hold a big picnic and field day at Seiberling field on Labor Day, for which many events are being planned.

The Goodyear motor truck service from Akron to Boston has proved a decided success and four large trucks are now used, carrying tires to the East and returning laden with tire fabric from the Goodyear Cotton Mills, at Goodyear, Connecticut.

The August issue of "The Firestone," the house-organ of the Firestone Tire & Rubber Co., contains an interesting editorial entitled "Open Wide the Windows of Your Mind," in which all-round development and breadth of vision are urged as valuable assets for the men who make a business of the manufacture and sale of tires.

The total volume of business done by the Miller Rubber Co. in the first 7 months of 1917 shows an increase of approxi-

mately 85 per cent over the corresponding period of last year. In 1916 the volume between January 1 and August 1 amounted to \$3,599,000. In the corresponding period of this year, the total volume amounts to \$6,605,000.

The comparative sales for each month are as follows:

	1916.	1917.
January	\$416,780	\$706,160
February	347,786	774,646
March	503,755	856,257
April	466,145	1,082,869
May	555,597	1,055,216
June	658,768	1,091,162
July	650,205	1,039,463
	\$3,599,037	\$6,605,776

The Mohawk Rubber Co. recently completed an addition to its factory and has installed new equipment, including boilers, mills and calender. A permit has been secured to build a new garage, to cost approximately \$30,000, to house the company's cars and trucks and those of some of the employees who use their cars in going back and forth to work. This building will also include a carpenter shop and some additional storage space, and will be constructed of brick, iron and concrete. The Mohawk company is now running to full capacity, and by the addition of some curing capacity will probably increase its production about 20 per cent during the coming year.

The Kendall Tire & Rubber Co. has purchased the factory and equipment of the Meyer Rubber Co., at Massillon, this state.

The O'Neil Tire & Rubber Co. has increased its capital stock from \$25,000 to \$100,000, in order to finance its rapidly growing business. Plans have been completed for a new factory building which will increase the present space fivefold. The O'Neil company manufactures tire accessories, air bags and tire repair equipment, and intends adding the manufacture of soles and heels and other rubber specialties to its lines.

In order to conserve its resources and not draw on capital and surplus at the present time, The Swinehart Tire & Rubber Co. recently paid its regular quarterly dividend of 1½ per cent on common stock in new preferred stock script instead of cash. The company took action early in the Spring to authorize an issue of \$500,000 preferred stock, anticipating the conditions that have since prevailed, but owing to the declaration of war on April 12, the issue could not be floated except at a sacrifice, which the company did not feel it advisable to consider.

H. Q. Tennant has been given charge of sales in the home office of The American Rubber & Tire Co. Mr. Tennant has had considerable experience with several of the larger rubber factories, principally in sales promotion work.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE rubber plants in Rhode Island are running at capacity, following necessary shut-downs for stock taking, overhauling and repairs of machinery, etc. Notwithstanding the fact that the production from every plant is far in excess of that ever before credited to them they are still behind their orders, and indications are that the rush will continue for months to come.

The Alice Rubber Shoe Mill, of the Woonsocket Rubber Co., at Woonsocket, which employs 1,500 operatives, resumed operations on August 17, and the Millville rubber mill and the felt mill of the same company, at Millville, are now in full operation after the vacation period.

After a shut-down from August 13 to 20, business at the

American Wringer Co., Woonsocket, is driving and great difficulty is being experienced in producing an output that will maintain anywhere near an equalizing pace with the orders that are being received. For the first time in its history the concern has introduced female help in its factory, 12 entering the finishing room during the past month. They are employed in tying the guarantee tags and doing light varnish work, and if the experiment proves successful, Manager J. P. Walsh states that the firm will employ more girls in some of the departments.

Percy A. Greenwood, assistant foreman in the finishing department of the American Wringer Co., concluded his duties on August 11, having passed his examinations for the National Army. He was presented a sum of money by his fellow foremen and office force.

Assistant Superintendent Charles J. Burns, of the Tubular Woven Fabric Co., Pawtucket, a member of Battery B, Rhode Island Battalion of Light Artillery, and Michael Cresendo, overseer of the paper room and a member of Battery C, were called into service the past month and are now with their commands at the mobilizing camp at Boxford, Massachusetts. Previous to their departure they were tendered a farewell reception, and a number of articles that will be useful and valuable to them during their service were presented by William Whitaker, a member of the office force.

The National India Rubber Co., at Bristol, is repairing and improving its property, and is overhauling and installing machinery. A substantial granolithic sidewalk, more than 800 feet in length, has been completed in front of the entire factory. A granolithic retaining wall, the length of the mill, has been constructed, which will be surmounted by an ornamental iron railing. Piers at each side of the main entrance will hold electric lights in ornamental brackets. Trees are to be planted in the spaces near the curbing along the walk to take place of those recently removed.

An important improvement is the enlarging of the boiler house, which will soon be completed. The upper part of the old boiler house is to be extended 10 feet higher, the addition to be of brick, with steel trusses and topped by a sheet iron roof. Plans have also been completed and bids are being asked for the erection of a new brick manufacturing building, three stories high, on which work is to be commenced at as early a date as possible.

Following their vacation periods, the daily output of rubber footwear from the National India Rubber Co.'s plant at Bristol averages 49,000 pairs, and the Narragansett Rubber Co., of Bristol, 14,000 pairs.

The O'Bannon Corporation, formerly known as the International Rubber Co., at West Barrington, is adding a number of calenders, and other new machinery is being installed to meet the increasing demand.

A fire, early last month, in the chemical room of building No. 2 threatened the entire plant of the Revere Rubber Co. It probably started from an explosion, which shattered containers and liberated a considerable amount of acid. Employees trying to hold the flames in check were overcome by the acid fumes, as were also, later, several firemen. The promptness of the fire department saved the plant from a repetition of the disastrous and fatal fire at this plant in 1912, but the loss of stock was considerable.

The Revere company is making extensive alterations and additions to its three-story factory building on Valley street.

The first dividend of 10 per cent in the matter of the Cataract Rubber Co., of Providence, has been declared by Referee in

Bankruptcy N. W. Littlefield and is now being paid to the creditors of record.

The Hope Webbing Co., Pawtucket, which is one of the largest manufacturers of narrow woven and braided fabrics in the country, is installing a number of new looms which, it is claimed, will increase the plant's production nearly one-third. The concern already operates between 1,000 and 1,100 looms and 250 braiders.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

AT a recent meeting of the Hood Rubber Co., Watertown, an increase of preferred capital stock of \$2,250,000, and an increase in common capital stock of \$1,000,000 were authorized. The preferred stockholders voted unanimously to exchange the old preferred stock for new preferred stock, share for share.

The directors have voted to issue 12,500 shares of preferred stock, and a large amount of this stock has already been subscribed for. They also voted to issue 5,000 shares additional common stock for subscription at par to holders of common stock of record at the close of business August 11, with rights to subscribe for one new share for every five old shares. It has been deemed advisable to terminate the voting trust which held a large majority of the common shares of the company, and the voting trust certificates are being called in for exchange for shares of the common stock of the company.

The Hood Rubber Co. is now showing a line of tennis shoes for the season of 1918 which includes a number of styles furnished with the pneumatic rubber heel on which the company own the patent. The Hood company claims to be the first to manufacture heel tennis shoes and also the first to exploit tennis shoes with the high Louis or Cuban heel similar to leather shoe styles for women. Another novelty is a line of workmen's and children's shoes with duck upper and rubber and fiber soles, which are expected to have a wide sale because of the high cost of leather footwear. This concern is vulcanizing its tennis lines under the pressure cure. Orders are already piling up for January to March delivery, and the tennis department is being run to capacity to enable the company to ship at dates indicated.

The Boston Woven Hose & Rubber Co. now has, at its factory in Cambridgeport, a fully equipped first aid hospital for the immediate treatment of employees who may be taken ill, or



injured. A trained nurse and an assistant are in constant attendance, and a physician is at the plant every day between 8.30 and 10 A. M. Safety stations have been established at convenient points in the various buildings of this extensive plant,

each of which is equipped with a stretcher, blankets, and a first-aid jar with complete supplies. At the hospital two rooms are provided and the equipment consists of an operating table of white enameled iron, bed and chairs of the same, an instrument cabinet of plate glass and white enameled iron frame, a medicine cabinet, chest of drawers for bandages and supplies, a sterilized white enameled sink, hot and cold water and all necessary instruments. Even such late inventions as the French Ambrine treatment, and Dakin's new antiseptic are provided. For such surgical cases as are beyond the scope of this factory hospital, arrangements have been made for immediate ambulance service, and provision for treatment at a local hospital, where beds have been engaged for workers who may be injured in the service of the company.

* * *

The Apsley Rubber Co. is very busy on manufacturing rubber blankets for the United States soldiers who have gone or are about to go to France, and although the company has a large amount of orders for its regular lines, these have been side-tracked in order to deliver the army goods in as large quantities and at as early dates as possible. Mr. Apsley, in a recent interview, said:

My plant is at the disposal of the United States Government for the manufacture of articles needed for the Army and I have made this offer in a spirit of patriotism. My company does not want to reap wartime profits but it wants to be of help in a time of the country's great need.

In the old days men enriched themselves when the nation was at war, but I would prefer to abandon this big plant built up during thirty-two years of endeavor rather than submit an inferior article to Uncle Sam for the use of the boys who are fighting our battles.

Our growth here is something we are proud of and we are going to cling to the old traditions.

* * *

Mention has frequently been made of the athletic activities of the employees of The Fisk Rubber Co., Chicopee Falls, this state, and of Fisk Park, the thirty-acre recreation ground, where ball games, amateur and semi-professional, are played every Saturday. In addition to its two base ball diamonds, three tennis courts, and a half-mile running track, a football gridiron has been laid out recently, basket ball courts have been added, and a hand ball court is in process of construction. This enterprise, though fostered by the company, is entirely in the hands of the employees, the expenses being raised by the one dollar membership fees, and by the athletic meets, and entertainments at which admission is charged. The Fisk Red Tops, which is one of the seven baseball teams, will meet several of the Western rubber factory teams of Akron, Cleveland and Detroit during its Western trip this season.

* * *

The Plymouth Rubber Co., Canton, this state, has elected a new board of officers as follows: James A. Clifford, president; Charles W. McDermott, vice-president, and J. E. Stone, treasurer. These and A. Sydeman, J. C. Haartz, W. G. Thomas and Marshall Cutting are the newly elected directors.

Mr. Clifford, the new president of the company, was until recently superintendent of manufacturing and reclaiming for the Boston Woven Hose & Rubber Co., of Cambridge, at its Plymouth plant. Previous to his nine years' service with that company he was connected with the United States Rubber Reclaiming Co. at Naugatuck, Connecticut, and his scientific and chemical education and practical experience make him a valuable acquisition for the Plymouth Rubber Co.

W. E. Kavenagh, the new factory manager of the Plymouth company, has been connected with the rubber business ever since 1899, and in 1900 was employed by The Goodyear Tire & Rubber Co., Akron, Ohio, as foreman, which position he left to take a four years' course at Harvard University, when he again

entered the employ of that company, taking charge of the chemical laboratory and deresinating plant, afterwards going as superintendent of the Goodyear plant in Canada. Just previous to his present connection he was associated with the Swinehart Tire & Rubber Co., Akron, Ohio, as general superintendent.

A general line of mechanical rubber goods will now be developed in addition to the present product. It is reported that the Plymouth Rubber Co. did a gross business of \$3,000,000 last year.

CANADIAN NATIONAL EXHIBITION.

The thirty-ninth Canadian National Exhibition is being held at Toronto. Over 1,000,000 visitors are expected. The grounds are situated on the shore of Lake Ontario, and extending along the water front for upwards of a mile, comprise 264 acres. Some of the principal buildings are:

MANUFACTURERS' HALL. Industrial arts and crafts, contains 72,500 square feet of space. A second building has approximately the same area, making a total of 145,000 square feet for the display of manufactured products.

MACHINERY HALL AND ELECTRICAL BUILDING. Heavy machinery and machinery in operation. It is equipped with ample steam power and shafting for the purpose, and has a floor space of 35,000 square feet.

INDUSTRIAL AND PROCESS OF MANUFACTURE BUILDING. A modern brick and steel structure with 76,500 square feet of floor space.

SCRAP RUBBER DEALERS FIGHT NEW YORK JUNK ORDINANCE.

Scrap rubber is included in the list of waste materials specified in the Junk Dealers' License Ordinance recently passed by the Board of Aldermen and approved by the Mayor of New York City. Under the provisions of this ordinance "anyone dealing in the purchase and sale of * * * rubber * * * in large or small quantities, shall be known as a junk dealer and his place of business a junk shop." Junk licenses must be procured and all merchandise must be kept in their possession at least 48 hours after purchase.

As it is manifestly unreasonable to classify persons engaged in the wholesale rubber business exclusively as junk dealers and to compel them to comply with the rigid provisions of the ordinance, several of the largest New York dealers in rubber scrap have retained Reit & Kaminsky to confer with the Police and License Departments regarding the matter. This law firm was also retained by the Wholesale Wool Stock Merchants' Protective Association and the Associated Dealers in Paper Mills Supplies of New York and succeeded in having the ordinance amended to exclude persons engaged exclusively in the purchase and sale in large quantities of scrap iron and steel, woolen rags and paper stock, and requiring only that each person shall annually file with the Commissioner of Licenses a statement in writing setting forth the name and address of such person and the character of his business. There is reason to believe that scrap rubber dealers will be placed on a similar basis.

THE LENGTH OF THE WORKING DAY.

The question of reduction of the hours of labor in manufacturing establishments is a most important one, and one which is continually being agitated. The National Conference Board is sending out a schedule of inquiries to manufacturers to secure such statistical information on this point as may be available when demands come for a further shortening of the working day. The Rubber Association of America, which is a member of the National Conference Board, is advising its members to fill out the blanks furnished them, and mail them to the office of the Board, 13 Beacon street, Boston, Massachusetts.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

NOW that we are all in the same boat there is no object in harping upon the altered conditions which war has imposed upon our rubber trade, as no doubt they have now been reproduced in America. The main feature of the moment throughout England is that anybody who has anything to sell does so at an enhanced price, in many cases beyond what is justifiable. The buyer enters a mild protest, but goes on buying, and if he is in business passes on the extra cost to his own customers. This might form an appropriate exordium to remarks on the position created by the recent advances in rubber goods notified by the India Rubber Manufacturers Association, but the subject cannot be ventilated in a few lines, and we are exhorted to be careful in the use of paper.

One of the busiest branches of the trade in non-war goods is the cycle tire department, the cycle having come into its own again in a marked degree, owing to the embargoes on and expense of other forms of locomotion. Moreover, the fine summer which has upset the calculations of the mackintosh and oil-skin makers has been conducive to pleasure cycling.

An unusual incident of the hot weather occurred during a thunderstorm on July 16, when the rubber works of Broadhurst & Co., Limited, Manchester, were struck by lightning and set on fire. The outbreak was soon subdued by the fire brigade and no interruption to business was experienced, but several work-people sustained injuries from broken window glass.

SURGICAL GOODS.

Naturally since the war began there has been an increased demand for surgical goods of various kinds, including what are generally known as druggists' sundries. In this sort of work, especially in certain classes of surgical goods, the French have always been the principal producers, and British surgeons have been in the habit of insisting upon certain articles being of French manufacture. Until quite recently, I believe, the particular American made articles which are now being sold in Britain were not made in America, and it has been suggested that what have been coming to us during the last two years were really of German origin. It is also said that a good deal of what was sold as of German make in pre-war days was really of French origin. The difficulty with the four or five British rubber works which specialize in surgical goods is to get them to make patented specialties. They say the prospective business is not large enough to tempt them to enter into it, and in such cases as they have undertaken, the prices charged for the manufacture of specialties have often been such as to prevent the patentee from doing anything like a large business. At the present time, owing to diminution of staffs and congestion of work, it is not surprising that delivery is much behind hand on orders that have been taken. One consequence of this—and the same thing applies to various other patented rubber goods—is that people quite outside the rubber trade are seriously considering the feasibility of going into rubber manufacture to a certain extent on their own account. This is a development that, when normal conditions return, will probably not commend itself to the large rubber works. They may, of course, console themselves with the thought that the new comers will lose money and be glad to revert to old-time procedure. Though it does not come under my paragraph heading, I may say that an important bicycle manufacturing firm is considering the manufacture of rubber tires.

THE INDIA RUBBER MANUFACTURERS' ASSOCIATION, LIMITED.

The outstanding feature of the statement made by J. T. Goudie, the chairman, at the annual meeting was the fact that

the 30 firms which are now members included such large concerns as Warne, Silvertown, and Scotch firms which had hitherto held aloof. The increase in the membership and the continually widening scope of its work has rendered the formation of various district and sectional committees imperative, and several of these sections, notably those dealing with waterproof garments, have been for some time at work. The general committee of management, which was elected at the meeting, contains several interesting names new to the association: Chairman, J. T. Goudie (Leyland & Birmingham Rubber Co., Limited); vice-chairman, Hugh A. Coles (Wm. Warne & Co., Limited); committee, P. A. Birley (Chas. Macintosh & Co., Limited), W. E. Birrell (Clyde Rubber Works, Limited), J. H. C. Brooking (St. Helens Cable & Rubber Co., Limited), A. Cairns (A. Cairns & Co.), M. Frankenburg (I. Frankenburg Sons, Limited), G. C. Mandleberg (J. Mandleberg & Co., Limited), P. Maclellan (George Maclellan & Co.), David Moreley (David Moreley & Sons, Limited), T. C. Redfern (Redfern's Rubber Works, Limited), Stuart A. Russell (The Silvertown Co.), James Tinto (Irwell & Eastern Rubber Co., Limited). In concluding his address the chairman said that it was very gratifying for the old committee as it retired to make way for a more widely extended representation, to note that all traces of former friction had disappeared and that there prevailed among the whole of the members an excellent spirit of concord and mutual confidence.

THE CHEMISTRY OF VULCANIZATION.

This was the title of a paper contributed by Dr. D. F. Twiss, chief chemist of the Dunlop Rubber Co., Limited, at the Chemical Congress held at Birmingham in July on the occasion of the annual meeting of the Society of Chemical Industry. The paper, which was a long one, cannot be usefully abstracted in the space available and I shall therefore confine myself to noting a few of its items. As a prefatory remark I may say that it is a matter of some international importance to the trade that the Dunlop company, following the lead of the North British Rubber Co., Limited, has abandoned the old established procedure of British rubber manufacturers and has allowed some of its laboratory work to be published and discussed. This is a matter for which the trade will join with the writer in his expressed indebtedness to J. V. Worthington, technical superintendent and director of the Dunlop company.

Owing to the difficulties of dealing with a body which is obtained chemically pure with exceedingly great difficulty, there remained yet many points, he said, in connection with the rubber industry of which the scientific interpretations are contradictory, vague, or based on quite insufficient evidence. Nevertheless, more especially during the last ten years, extraordinary advances had been made in the chemistry of rubber.

In the earlier days of the plantation rubber industry considerable stress was laid on the variability in the rate of vulcanization of plantation Para as compared with wild Para rubber. An explanation was to be found in the discovery of Eaton and Grantham that if the soft slabs of coagulum are allowed to "mature" for several days before the retained serum is expressed the resulting rubber vulcanizes with unusual rapidity, the effect attaining its limit after a period of, roughly, seven days before washing and crepeing. The advantage of a uniform supply of such rapidly vulcanizing rubber for special purposes would readily be recognized, said Dr. Twiss, who added that it should be specially marked for sale. In the subsequent discussion Dr. Stevens, of London, said the labeling of such rubber was of great importance, otherwise the complaints as to vari-

ability would be greater than ever. He added that during maturing oxidation took place, weakening the surface. After discussing the action of inorganic accelerators, Dr. Twiss went on to speak of organic accelerators and said that one of the most powerful of these organic catalysts is aldehyde ammonia, its effectiveness far outweighing what might be expected of its ammonia content. It was a remarkable circumstance that almost the whole of the known effective organic accelerators are basic, their activity depending upon their relative alkalinity. The alkali hydroxides were strong accelerators. For a long time it had been known that alkali reclaimed rubbers vulcanized with exceptional rapidity. It had been shown that a small percentage of powdered caustic potash caused a greatly increased rate of vulcanization in a mixture of rubber and sulphur. He came to the conclusion several years ago that the action of both inorganic and organic acids depended upon their basicity and that the action of the latter was more pronounced only because they were soluble in rubber and therefore more evenly distributed.

Dr. Twiss then went on to describe some interesting experiments he had made with a 25-per cent solution of caustic potash in glycerol. Some results were using a mixture of 95 per cent rubber and 5 per cent sulphur, residual free sulphur 3.6 per cent, with 2 per cent glycerol accelerator 0.31 free sulphur; with 1 per cent aldehyde ammonia 0.17 free sulphur; with 1 per cent para-nitroso dimethylaniline 1.5 per cent free sulphur. The nitroso compound was much more effective in mixings containing a high percentage of sulphur than with those with a relatively low proportion and this would account for its very partial success in low sulphur, litharge or antimony mixings. Turning to other topics, he mentioned that the evidence for the supposed vulcanization of a rubber sulphur solution at the ordinary temperature by ultraviolet light was unconvincing. In concluding, he expressed the view that what he had said was not only indicative of great activity in rubber chemistry, but would also indicate how wide are the gaps of knowledge which at present are bridged over by mere theories and need to be filled up with a solid mass of experimental evidence.

This paper was followed by one on "The Scientific Needs of the Rubber Industry," by B. D. Porritt, chemist to the North British Rubber Co., Limited. This paper was in the main a plea for the establishment of more laboratories in rubber works, it being pointed out that the industry required research laboratories as well as the routine laboratories which had sprung up since the advent of the much abused specification. While the laboratory might be accepted by some manufacturers as a valuable adjunct, it was as yet not recognized as an essential. The research laboratory he recognized would be only within the means of the largest works, but with the more general cooperation which might now reasonably be expected the results could be used to benefit the trade as a whole. A beginning had been made by the inclusion of some rubber manufacturers on an Advisory Research Committee of the Imperial Institute, but there was room for a much greater measure of commercial and scientific cooperation, this being a good time for this development because the abnormal trade conditions and national needs had for a while deadened trade competition and petty jealousies and had necessitated many conservative manufacturers abandoning the traditions of a lifetime. In the course of the interesting discussion which ensued, Dr. Twiss said that too much blame seemed to be laid on the manufacturers for neglecting research. The manufacturers were not out to benefit other people and had no sympathetic regard for the constitution of rubber, which seemed an unimportant matter from their point of view. A good deal of research had been done, but from mistaken motives the manufacturers had not allowed it to be published. A good deal of the research done in accelerators, for instance, had been crude and disconnected. Altogether there was a much greater excuse for the rubber industry not having raised its pure chemistry to

a higher stage than would appear at the first casual glance.

Dr. Stevens said that now was the time for the manufacturers, through their association, to make arrangements to start research. Mr. Sproxton said he thought that the sting of the paper had been drawn by the paper which went before, and the president of the society, Dr. C. C. Carpenter, agreed with this remark, the previous paper having told them that there were, at any rate, some manufacturers who were far seeing and who understood the value of scientific investigation and, what was more important still, allowed the results of these investigations to be brought to the notice of the industry generally.

BRITISH WAR ORDERS.

Proofers to the trade are now being kept busy by government orders for proofed shoe lining. Great quantities of tan duck are also being proofed to tan twill for government purposes such as valises, stretchers, bags of all kinds and hold-alls, besides cloth for gas-masks. The latter take a very long time in proofing, as a number of rubber coatings are necessary before the required specifications are attained. The government has also put out orders for covers for caps, bonnets, breech-loaders and Lewis guns.

Large quantities of rubber thigh boots have been secured by the War Office for winter use in the trenches. These were formerly obtained from Canada and the United States, as practically only one British firm could produce such boots, but now new firms have taken up their manufacture, and it is no longer necessary to depend on supplies from overseas.

BRITISH REQUISITION OF CARNAUBA WAX.

The Army Council intends to take possession of all stocks of carnauba wax, excepting stocks of less than two tons, that are at present or may arrive in the United Kingdom. All holders must, therefore, make full returns of their stocks, giving particulars of quantities, descriptions and cost prices to the Director of Army Contracts.

BRITISH INDIAN AUTOMOBILE CONCESSION WITHDRAWN.

In connection with the prohibition of the importation into British India of motor cars, motorcycles, and parts, it is learned that the Indian Government will withdraw the concession under which it was decided to admit, under license, cars, motorcycles and parts actually paid for before December 23, 1916, except in the case of cars shipped before August 1, 1917.

SUSPENSION OF THE KEW BULLETIN.

The announcement that this important journal is to be suspended under pressure of war economy and scarcity of printing materials, has roused a storm of protest. This organ not only serves to circulate the results of scientific activities at Kew, but also places at the disposal of the economic and scientific gardens in India and the colonies the latest facts in pure and economic botany that may be of importance to them.

THE EXCESS PROFITS DUTY AND PLANTATION RUBBER.

From the very outset the Rubber Growers' Association, London, England, has, under the best advice obtainable, taken vigorous measures to procure some amelioration of the hardship and inequalities to which many plantation rubber companies are subject under the Excess Profits Duty provisions of the British Finance Act of 1915, which imposes a uniform 10 per cent standard on the basis of capital. Particular attention has always been given to the interests of what have been termed "young producer" companies which are so heavily hit by a datum line based on the inadequate percentage standard allowed by the Board of Referees and figured on profits earned prior to the

outbreak of the war. Deputations have been heard by the Chancellor of the Exchequer and the Commercial Committee of the House of Commons, with the result that while the Finance Bill of 1917 as issued does not contain the general clause or amendments suggested by the Rubber Growers' Association, a provision is made to lessen after December 31, 1916, the hardship arising from the Vallambrosa judgment.

During the debate in the House of Commons the Chancellor of the Exchequer stated that while one industry could not be dealt with in a general tax in one particular way, the Treasury would not be opposed to a rehearing by the Board of Referees, and the Rubber Growers' Association has determined to continue the matter along that line. Meanwhile, as a result of representation on behalf of the association a new clause has been added to the bill by the Treasury sanctioning referring to the Board of Referees any application regarding a class of trade or business, and permitting closed cases to be reopened and orders revised if deemed advisable.

RUBBER FOOTWEAR IN NEW ZEALAND.

According to Consul General Alfred A. Winslow, at Auckland, New Zealand, the United States practically controls the New Zealand and market in gum boots, but there has been quite a falling off in the trade for 1916. The American gum boot is considered better than any other, unless it be the Canadian boot. The imports of gum boots for three years are here shown.

From—	1914.		1915.		1916.	
	Dozen pairs.	Value.	Dozen pairs.	Value.	Dozen pairs.	Value.
United Kingdom	223	\$11,247	100	\$5,270	56	\$3,582
Canada	360	11,688	309	8,755	285	8,730
Australia	14	743	24	1,732	3	200
United States	1,272	48,945	1,286	45,550	1,029	38,947
All other countries .....	.....	19	.....	.....	.....	.....
Totals	1,869	\$72,642	1,719	\$61,307	1,373	\$51,459

In galoshes and overshoes of rubber, gymnasium shoes, etc., Great Britain sent the largest, Canada second, and United States the third largest amounts. American manufacturers do not seem to be holding their own in these lines, possibly because of the preferential import duty which favors the United Kingdom. The imports are as follows:

From—	1914.		1915.		1916.	
	Dozen pairs.	Value.	Dozen pairs.	Value.	Dozen pairs.	Value.
United Kingdom	24,167	\$86,624	24,729	\$86,667	21,492	\$88,809
Canada	3,160	22,746	2,690	17,695	3,069	19,408
France	216	516	30	228	.....	.....
Sweden	71	326	283	1,120	113	389
Japan	18	29	116	418	736	2,151
United States	2,850	17,807	2,406	15,014	1,546	9,426
All other countries	100	418	10	39	80	146
Totals	30,582	\$128,466	30,264	\$121,181	27,036	\$120,329

A 1 per cent war tax is collected on all imports into New Zealand. Galoshes and overshoes of rubber, gymnasium shoes, etc., pay a duty of 22½ per cent from the United Kingdom and possessions and 11¼ per cent additional from all other countries, plus the war tax. Gum boots enter free of duty from all countries, with the exception of the war tax.

MOTOR CAR IMPORT LICENSES DISCONTINUED IN FRANCE.

A Ministerial Notice, published in the French "Journal Officiel" for July, is to the effect that no further licenses will be granted for the importation into France and Algeria of motor cars and motor lorries except in cases where it is proved that the vehicles were despatched direct to France or Algeria at a date prior to the publication of the notice.

RUBBER SPONGE IN TREPANNING.

For closing a hole in the skull Dr. C. Scandota, of Naples, uses rubber sponge. He reports to "La Riforma Medica" that he tried it on a rabbit and a dog, which he killed after nine and six months and found that except for slight loose adhesion to

the dura, the rubber sponge was unchanged. It had caused no trouble and the animals had behaved normally.

FRENCH WEST AFRICAN EXPORT DUTY.

The valuation of rubber exported from French West Africa from April 1 to October 1, 1917, has been fixed for the purpose of assessing export duty, at 500 francs per 100 kilograms [about \$100 per 220 pounds] for exports from Senegal, French Guinea, the Ivory Coast (including Assini), and Dahomey. Export duty is leviable at the rate of 7 per cent on the valuation.

COMPILATION OF RUBBER GOODS IMPORT STATISTICS IN HOLLAND.

In view of the possible resumption of the importation of rubber articles into Holland in the near future, The Netherlands Oversea Trust Co. has issued a request that those interested should send a written statement, mentioning countries of origin, of the quantities and weight of rubber articles, excepting tires, which they have imported directly during the last three years, whether for home consumption or reexport. In case of an increase in the imports, this was to be stated, as well as the reasons for such increase.

THE NETHERLANDS EXPORT COMPANY.

While war conditions disturb the normal exchange of goods between Holland and foreign countries, this company, recently formed at The Hague, will endeavor to provide for the exportation of Dutch wares, and promote the importation of articles of which there is scarcity in Holland. The activities of the company are controlled by the Minister of Agriculture, Industries and Commerce, who can order its liquidation when he considers that its existence is no longer necessary.

FOREIGN TRADE REPORTS.

AUSTRALIA.

ACCORDING to the latest statistics, Australia imported during the fiscal year ending June 30, 1916, rubber manufactures to the value of \$3,774,120, of which \$2,314,935 represented importations from the United States. These totals embrace tire rubber, rubber-tire fabric, tires, tubes, rubber stoppers or corks, rubber hose, bandages, elastic stockings, hatmakers' press bags and rings, gas bags, soles, pads and heels, and crash mats. India rubber, crude or powdered and reclaimed, rubber waste, and hard rubber in sheets were imported to the value of \$2,430,775, principally from Brazil, Ceylon, Straits Settlements, the United Kingdom, Peru, and Samoa; only \$42,380 was imported from the United States. Rubber thread, boot and apparel elastic, masticated rubber, syringes, and similar manufactures totaled \$186,050, the United States supplying \$17,140 worth. In the 10 months from June 30, 1916, to April 30, 1917, Australia imported india-rubber goods to the value of \$4,397,150, but the share of the United States is not given in the published returns now at hand.

SOUTH AFRICA.

During the past five years the imports of rubber goods into South Africa were: 1912, £42,191; 1913, £35,603; 1914, £34,083; 1915, £325,338; 1916, £520,145.

THE AZORES.

Imports of rubber goods, including tires, and automobiles, for 1916 show a marked increase over those for the previous year, the totals for the first-named articles being \$8,660 against \$849; while the figures for automobiles and their parts were \$9,586 in 1916 and \$7,852 in 1915.

The United States share in this trade was:

	1915.	1916.
Rubber goods and tires	\$260	\$1,709
Automobiles and parts	5,838	8,301
Totals	\$6,098	\$10,010

HOLLAND.

The rubber exports from Amsterdam to the United States during the past four years were \$382,430 in 1913, \$534,805 in 1914, \$98,960 in 1915, and \$164,689 during 1916. Automobile imports into Holland from this country during 1916 are said to have been the highest on record.

LONDON.

The exports of rubber from London to the United States during the six months ending June 30, 1917, amounted to \$34,611,850. For the same period in 1916 the value was \$24,556,033.

NEW ZEALAND.

The following table gives the imports of rubber footwear for the years 1914, 1915, and 1916 by country of origin, number of dozen pairs, and value:

	1914.		1915.		1916.	
	Dozen pairs.	Value.	Dozen pairs.	Value.	Dozen pairs.	Value.
Galoshes and overshoes of rubber, gymnasium shoes, etc:						
United Kingdom	24,167	\$86,624	24,729	\$86,667	21,492	\$88,809
Canada	3,160	22,746	2,690	17,695	3,069	19,408
France	216	516	30	228	.....	.....
Sweden	71	326	283	1,120	113	389
Japan	18	29	116	418	736	2,151
United States	2,850	17,807	2,406	15,014	1,546	9,426
All other countries.....	100	418	10	39	80	146
Totals	30,582	\$128,466	30,264	\$121,181	27,036	\$120,329
Gum boots:						
United Kingdom	223	\$11,247	100	\$5,270	56	\$3,582
Canada	360	11,688	309	8,755	285	8,730
Australia	14	743	24	1,732	3	200
United States	1,272	48,945	1,286	45,550	1,029	38,947
All other countries.....	.....	19	.....	.....	.....	.....
Totals	1,869	\$72,642	1,719	\$61,307	1,373	\$51,459

SPAIN.

A great demand exists in the Barcelona district for rubber heels and soles, about 10 tons having been imported during 1916. The sizes of such heels which are in greatest demand for women's shoes are those of medium dimensions, adapted to the Cuban heel. The whole heel for men's shoes is not generally used, its place being taken by the half heel, all sizes of which have an excellent sale. Rubber soles are difficult to obtain at present, but could be disposed of readily if more widely distributed. These articles pay a duty of \$0.32 per pound.

THE SITUATION IN RUSSIA.

By a Special Correspondent.

THE war and the revolution are working changes in the Russian peasant's conception of comfort and luxury and of what degree of each ought to fall to his share, that are as important—if less apparent—as his new attitude towards politics. He has been taken out of his tiny village, brought to large towns, made to work in factories, and, in any case, he now receives more money than he ever dreamt of possessing. He has learned that there are comforts, hygienic and sanitary, and is no longer satisfied with his village or town, where there are no tramways, lighting-systems, baths, etc. And his demand for all these and other things is going to cause the establishment of numerous factories and the placing of vastly increased foreign orders. Russia sees her backwardness and is striving mightily to advance. Conscious of her need of direction in this great effort, she turns to America for help with the cry voiced by one of her able men:

Teach us the a-b-c's of sane and wholesome work, make us efficient in our efforts, show us the results of well applied labors, and above all help us to erase that ancient self-verdict of the Russians which says: "Our land is vast and fruitful but there is no order in it."

America's growing interest in Russia is well known, and lately a circular was addressed to the different government departments in Russia to ascertain their attitude concerning the question of

the investment of foreign capital, and particularly American capital, in Russian enterprises. Furthermore, the Russian-American Chamber of Commerce is sending Professor B. E. Shatzky on a mission to the United States, to open a general information bureau for the distribution of data in connection with economic conditions in Russia.

It is interesting to learn that America's exports to Russia for 1916 were practically six times as great as in 1914, and nearly five times those of 1915.

Among the exports for 1916 may be noted.

Rubber belting, hose, etc.....	\$4,845
Automobile tires	1,125,733
Other tires	28,313
Miscellaneous rubber manufactures.....	20,416
Insulated wire and cables.....	13,915
Fountain pens	2,058
Total	\$1,195,280

The value of all kinds of motor vehicles imported from America was \$18,749,186. This includes airplanes, commercial and passenger automobiles and parts (except tires and engines) and motorcycles. The amounts for 1914 and 1915 were \$1,058,938 and \$9,456,089, respectively. The business in rubber manufactures during the same years was \$22,891 and \$12,616.

Russia also buys large quantities of cotton, Upland (including linters) and Sea Island. In 1916 the figures for Upland cotton and linters were 86,724,722 pounds, valued at \$10,125,462, and in 1915 41,062,654 pounds, valued at \$4,218,116.

THE DEMAND FOR CRUDE RUBBER.

The shortage of rubber is keenly felt in Russia and the demand is increasing continually. Negotiations, however, are hampered owing not only to shipping difficulties and freights, but also to the very great difference in exchange. Russia has always been a large consumer of rubber; before 1914 she imported 9,000 tons of raw rubber and gutta percha, and despite the war with its attending obstacles to trade, the imports were not diminished; in fact, they were increased in the case of rubber manufactures. And it is not likely that peace will lessen the demand for either the crude or manufactured article.

THE SITUATION IN MALAYA.

By a Special Correspondent.

RUBBER PRODUCTION.

THE total amount of rubber produced in the Malay Peninsula in 1916 falls just short of running into six figures, a development amazing in its rapidity, as is well illustrated by the following table:

Year.	Production in Malay Peninsula. Tons.	Year.	Production in Malay Peninsula. Tons.
1916.....	99,063	1910.....	6,504
1915.....	70,214	1909.....	3,340
1914.....	47,006	1908.....	1,629
1913.....	33,641	1907.....	885
1912.....	20,320	1906.....	430
1911.....	10,782		

This total output is derived from the following parts of the Peninsula:

	Production.		
	1914.	1915.	1916.
Selangor	14,015	19,120	26,163
Perak	11,042	16,663	23,421
Johore	5,358	9,167	14,004
Malacca	6,766	11,022	12,388
Negri Sembilan	5,278	8,177	12,179
Penang and Province Wellesley.....	2,425	2,643	4,935
Kedah	1,030	1,889	3,314
Kelantan	307	536	1,010
Pahang	362	564	1,001
Singapore	423	433	628
Trengganu .....	.....	.....	20
Totals	47,006	70,214	99,063

The rapid increase of Johore rubber is striking. Another fact is that to-day's production of Singapore island alone exceeds that of the total Peninsula eleven years ago, and that Selangor and

Negri Sembilan together produce to-day more rubber than the whole of South America put together!

The total exports from Singapore in 1916 were 48,650 tons; in 1915 the amount was 38,283 tons, of which 12,824 tons went to Great Britain, 1,998 tons to European countries, 1,230 tons to Japan, and 21,075 tons to the United States. Exports from the Federated Malay States now constitute about half the world's output and were 62,763 tons in 1916 as compared with 44,524 tons in 1915.

The increase in direct sales to America is best illustrated by the following:

	1913.	1914.	1915.
Direct shipments tons	2,508	4,510	21,075

ACREAGE UNDER RUBBER.

Government figures available refer to estates over 100 acres in extent and show a grand total at the end of 1915 of 833,069 acres planted in rubber with a reserve of 917,185 acres.

Further grants of land have been made during the year, but the government of the Federated Malay States has since decided to discontinue the issue of land grants of more than 50 acres in extent, pending the return of labor, capital and administrative conditions to normal.

POSSIBLE RESTRICTION OF EXPORTS.

The prohibition of rubber exports from Ceylon is regarded with anxiety here, and it is feared that a similar prohibition will be applied to Malaya. There is a rumor that the exports to the United Kingdom are to be reduced to 2,000 tons monthly. In view of this condition, schemes for limiting the output—alternate day tapping or complete abandonment throughout the country of Sunday tapping—have been suggested. There are authorities, however, who consider that the position would hardly be as serious as it sounds if more rubber could be shipped direct to the United States via the Pacific Ocean. It is pointed out in this connection that America has become the greatest consumer of rubber, and that of the large quantities entering the country only 22 per cent came from Great Britain. An interesting question is whether America will have to pay more or less for the rubber. To some, the former appears probable, since a demand is here concerned that must be satisfied, while others point to the possibility of operators in Singapore taking advantage of the situation created by the restriction of imports to depress the local market, and suggest that the authorities should fix a minimum price or take some other means to protect the planter.

RUBBER SEED OIL EXPERIMENTS.

Experiments are being made in the Federated Malay States regarding the commercial possibilities of rubber seed oil. The establishment of local crushing plants is being considered, the oil to be shipped to Great Britain and the cake used as cattle food or manure.

One of the chief difficulties in establishing a local crushing industry is the fact that the crop season for rubber seed lasts only about two months. Tests are therefore being made to discover whether rubber seed can be preserved for any length of time.

THE F. M. S. AGRICULTURAL CONFERENCE.

AT the Federated Malay States Agricultural Conference, held at Kuala Lumpur late in April, several interesting papers on various departments of plantation practice were read by T. J. Cumming, E. W. King, W. R. Shelton Agar, R. M. Richards, W. N. C. Belgrave, A. P. Vesterdal, F. G. Spring and others. Further facts were developed by the discussion in which many planters participated.

RUBBER CULTIVATION AND DISEASES.

It was stated that before attempting manuring in the case of poor areas, working of the soil should be tried, especially with

plough and harrows. A loose topsoil was of vital importance and rubber trees responded very well to proper treatment in respect to cultivation. Tillage in circular plots around the trees was recommended in the case of previously planted areas, the best time for this being the wet season, as the abundant moisture could then be conserved for the dry season.

Experiments in manuring showed that lines did more harm than good. Kainit seemed to have no effect. The best result was obtained on blocks receiving bonemeal at the rate of 400 pounds to the acre; but the effect of the same quantity of superphosphate was not far behind. Satisfactory results were also obtained with basic slag.

In connection with thinning-out, pollarding was not recommended. Pollards yielded little latex, led to careless tapping and prevented adjacent trees from benefiting fully. The most satisfactory way was to cut out the tree about two feet below ground level, removing as many side roots as possible without interfering with adjacent trees. As to the method of thinning-out, it was held that with 20 by 20 planting, as a general rule, as soon as 90 per cent of the trees were tappable, the rest might be dispensed with right away. After that, as soon as the natural development of trees showed signs of being checked the number per acre should be reduced.

The usefulness of clean-clearing to prevent the spread of diseases was also emphasized. The best way of getting rid of timber was by "double felling," that was, to allow clearings to grow up again for a year after the first felling and then refell and burn off. To prevent the spread of diseases, trenching deep enough to sever lateral roots and wide enough to include all affected roots, was recommended. The best time for clean clearing was before planting, but as the expense of this was very great, smaller stumps and roots could be taken up, while the large stumps could be trenched.

VARIABILITY OF PLANTATION RUBBER.

B. J. Eaton read an important paper on "Preparation of Plantation Para Rubber With Special Reference to Future Considerations." The researches of the F. M. S. Agricultural Department, he said, showed that variable methods of preparation were responsible for variability of the product. According to him, the uniformity of fine hard Para was due to the length of time taken in preparation, averaging any variations in conditions. He pointed out that market demands made it impossible for estates to produce one uniform type of rubber, so uniformity could apply strictly to only one type of rubber. For the present at least, three or four grades must be made, including two first grades—Pale crêpe and No. 1 lower grade crêpe—consisting of lump, skimmings and picked scrap—and No. 2 lower grade crêpe of bar shavings and earth scrap.

In discussing the better grades, he considered the problem of continuing the production of Pale crêpe and Smoked sheet, or of substituting the so-called "Slab" rubber for Smoked sheet. His conclusions are given in detail on page 716 of this issue.

RUBBER IN THE BRITISH COLONIES.

Rubber as a crop in India is growing in prominence, especially in Burma and Madras. The exports of raw rubber from India in the year 1916 were 6,229,242 pounds, valued at £970,916, as compared with 4,840,640 pounds, valued at £756,994, in 1915. Of the exports in 1916, 3,847,125 pounds, valued at £643,718, were shipped to the United Kingdom.

The total value of rubber exported from Uganda during 1916 was £5,374 as against £3,159 in 1915. The crop suffers little from pests or diseases and promises to become of importance. In 1915-16 only 5,538 pounds of wild rubber were exported.

The export of rubber from Zanzibar is mainly derived from *Landolphia kirkii*, of which a considerable quantity grows wild in a forest in Pemba. 2,384 pounds, valued at £213, were exported in 1915. The cultivation of Ceara, which was taken up

by the government in 1907, was not successful and has been discontinued.

The output of wild rubber in Nyasaland has decreased steadily until it is now a negligible quantity. Cultivated rubber, on the other hand, is shown to be on the increase, 6,766 acres being under cultivation in 1915-16, as compared with 5,936 in the previous year. Exports of cultivated rubber from Nyasaland in 1915-16 were 46,002 pounds, valued at £3,801, as compared with 33,685 pounds in the previous year.

In Seychelles there are about 184,000 rubber trees planted out, and about half of this number have reached the tappable size.

The value of the exports of rubber from Nigeria in 1915 was £38,113, as compared with £38,854 in 1914. On two Para rubber estates in the Sapele district, 94,413 pounds of rubber were harvested.

From Ashanti 317 tons of rubber, valued at £20,135, were exported during 1915. The increase was due to a renewed demand in Europe, caused by the exceptional conditions prevailing. When these conditions cease this trade may be expected to die down again. The natives have shown little interest in planting out Para seedlings. There are two European agricultural companies in the Southern Province of Ashanti, which have planted out large areas of cocoa and rubber. The oldest Para trees are six years old, and most of the trees are now tappable. The *Funtumia* trees are described as a failure, as they appear to need at least twenty years before yielding commercially.

Rubber has been planted on several estates in the wet districts of Vitilevu and Vanualevu in Fiji. The cultivation commenced about nine years ago, and subsequent growth has been satisfactory as compared with other countries. The plants now in Fiji have stood the occasional storms well. Rubber was exported from Fiji in 1915 to the value of £3,464, as against £463 in the previous year. It is hoped that the export of this produce will increase.

The leaf disease of rubber has again visited some plantations in British Guiana. It is considered that until a uniform period of wintering of the trees is obtained, considerable trouble in this respect must be expected.

RUBBER TRADE IN COCHIN CHINA.

Figures for the years 1913, 1914, 1915 show an increase in the quantity of rubber exports, but a decrease in the imports. This is mainly due to the fact that a great part of the French population, using manufactured articles, has returned to France on account of the war.

The exportation of wild rubber, which used to be sent along the Mekong river from the forests of Laos and Cambodia, is no longer of any importance. On the other hand, plantation rubber exports have increased rapidly in the last few years. In 1908, 3 tons were shipped from Saigon, while in 1915, 357 tons were exported. The amount for the period January 1, 1916, to August 22, 1916, was 312 tons, as against 133 tons for the same period in 1915. Since January, 1915, the exportation of rubber to countries other than France has been prohibited. Exports for the years 1913, 1914, 1915 were valued at \$128,752, \$158,328 and \$315,075, respectively.

The decrease in some imports is illustrated by the following:

	1913.	1914.	1915.
Rubber goods	\$185,081	\$197,234	\$180,000
Automobiles	412,800	202,212	152,004
Cycles	218,178	204,878	104,703

Sheet rubber is imported from France, and the value increased from \$11,000 to \$40,000. Rubber articles come from France and Singapore and advanced from \$23,000 to \$38,000, but the values for tires and hose decreased from \$142,000 to \$86,000. Automobile, riskshaw and cycle tires are imported chiefly from France and England.

BOLIVIAN NOTES.

BOLIVIA is one of those countries whose economical situation has been seriously affected by the war. It was, in fact, due only to her great mineral wealth that she was able to support the difficult position at all. However, it would appear from trade statistics for the first four months of 1916 that conditions were improving.

Another important item is the export of rubber, which underwent a marked increase in 1915. The United States is Bolivia's best customer for rubber, having bought no less than 90 per cent of the whole quantity exported. The distribution of the rubber exports in 1914 and 1915 was as follows:

	1914.		1915.	
	Metric tons.	Value.	Metric tons.	Value.
United States	419	\$311,701	4,645	.....
Great Britain	2,846	2,098,199	341	.....
France	575	425,800	68	.....
Germany	481	347,540	16	.....
Belgium	157	115,978	.....	.....
Chile	7	12,931	.....	.....
Argentina .....	.....	.....	9	.....
Spain .....	.....	.....	2	.....
Totals	4,485	\$3,312,149	5,081	.....

The total rubber exports in metric tons of 2,204.6 pounds, over a period of 10 years show a steady increase in production: 1906, 1,930; 1907, 1,831; 1908, 1,818; 1909, 3,052; 1910, 3,118; 1911, 3,646; 1912, 4,080; 1913, 5,143; 1914, 4,485; 1915, 5,081.

Among the 1915 imports from the United States may be noted: Automobiles, valued at 22,183 bolivianos (the normal value of a boliviano in United States currency is \$0.3893), and rubber manufactures amounting to 4,628 bolivianos. The total amounts for these two items were, 26,192 and 24,282 bolivianos respectively.

EXPORT TAXES ON RUBBER.

In accordance with the law of November 18, 1913, rubber exported from Bolivia is subjected to the following export taxes:

Article 1.—When the quotation for rubber is 25 to 36 pence the export tax shall be 2 per cent ad valorem. This tax shall be 4 per cent ad valorem when the quotation rises to 37 to 48 pence, and 6 per cent when the quotation is 49 pence or above.

Article 2.—The same rate of export taxes shall apply to rubber of inferior grades, with an allowance of 30 per cent off the quotation for fine rubber.

Article 3.—In cases where the export tax collected in custom-houses of foreign countries adjacent is lower than that imposed by Bolivia, the government shall have the right to lower the rate of the Bolivian tax. (This measure was adopted to prevent smuggling of the rubber across the border and the consequent loss of Bolivian revenues.)

Article 4.—For the purpose of this law the value of rubber exported from Bolivia shall be 70 per cent of the London quotations at the time of the exportation. The London quotations shall be certified to the Bolivian Government fortnightly by the Bolivian consul stationed in London.

The acquisition of rubber lands in Bolivia is subject to the law governing the public lands of Bolivia.

Bolivia has no sea coast, but the government is much interested in the development and extension of railway lines and has declared its intention to extend the La Paz-Yungas railway, thus securing an outlet to the Atlantic by way of the Amazon River and the Madeira-Mamore Railway. This is of special importance to rubber producers who will then have an easy connection with the railways that connect with the sea coast ports.

The President of Bolivia has been authorized to contract a loan of £1,000,000 for the construction of the Atocha-Tupiza line, the last link between La Paz and Buenos Aires, and the government is endeavoring to place this loan in the United States.

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED JULY 17, 1917.

- N**O. 1,233,401. Hose-coupling. J. H. Reeve, Sherman, Calif.
 1,233,420. Laminated, cohesive, interwound fabric constructed in tubular and annular form. L. A. Subers, East Cleveland, Ohio.
 1,233,465. Demountable rim. A. H. Harris, Barberton, assignor to The Firestone Tire & Rubber Co., Akron—both in Ohio.
 1,233,478. Tire. I. B. Irons, Morgantown, W. Va.
 1,233,504. Shoe-heel. J. Plant, Douglas, Alaska.
 1,233,537. Massage device. J. E. Ahlman, Denver, Colo.
 1,233,660. Tire-rim tool. A. A. Friestedt, assignor to Friestedt Manufacturing Co.—both of Chicago, Ill.
 1,233,705. Wheel-rim. J. T. Ronald, Seattle, Wash.
 1,233,811. Menstrual bandage or catamenial sack. P. Roger, Milford, Mass.
 1,233,853. Pneumatic tire. J. Drummond, C. Spuhel, and F. Spuhel—all of Kansas City, Mo.
 1,234,004. Vehicle-tire. F. Funderburg, Huntington, Ind.
 1,234,075. Tire-armor. W. H. Opitz, Bedford, Ind.

ISSUED JULY 24, 1917.

- 1,234,118. Tire armor. M. V. Batcheller, Gowrie, Iowa.
 1,234,142. Pneumatic tire. F. S. Dickinson, New York City.
 1,234,143. Pneumatic tire. F. S. Dickinson, New York City.
 1,234,144. Self-healing inner tube. N. C. Doss, Rome, Ga.
 1,234,193. Detachable tread for pneumatic tires. A. G. Mass, assignor of one-half to J. W. Stapleton—both of Cincinnati, Ohio.
 1,234,289. Cushion wheel. A. Chelew, Toronto, Ontario, Canada.
 1,234,331. Demountable tread for tires. R. B. Hartman, Milwaukee, Wis.
 1,234,338. Hose nozzle. C. F. Hughes, Portland, Oregon.
 1,234,538. Antislidding tire attachment for wheels. J. A. Granstrom, Everett, Mass.
 1,234,631. Operating tool for split tire rims. E. O. Collins, Chillicothe, Ohio.
 1,234,682. Vehicle tire. E. W. Mighell, Plano, Ill.

ISSUED JULY 31, 1917.

- 1,234,820. Demountable wheel rim. F. H. Summeril, Los Angeles, Calif., assignor, by mesne assignments, to Keystone Vehicle Parts Co., Inc., New York, N. Y., a corporation of New York.
 1,234,821. Rubber tire. J. A. Swinehart, St. Louis, Mo.
 1,234,940. Relief valve for pneumatic tires. H. L. Shaffer, Washington, Iowa.
 1,235,013. Rubber heel. M. Costa, East Wallingford, Conn.
 1,235,080. Tire tube protector. J. T. Tooloose, Platin, Mo.
 1,235,093. Wheel tire. T. E. Auvil, Baltimore, Md.
 1,235,095. Inflatable surgical packing. A. L. Beck, New Rochelle, N. Y., assignor to Elia C. Beck.
 1,235,142. Syringe. S. A. Ichilian, Washington, D. C.
 1,235,156. Armored tire. C. E. Peabody, Brooks, Me.
 1,235,169. Pacifier. G. V. Tallon, New Haven, Conn.
 1,235,308. Tire rim manipulator. A. A. Friestedt, assignor to Friestedt Manufacturing Co.—both of Chicago, Ill.
 1,235,360. Tire rim. S. P. Michael, Frankfort, Ind.
 1,235,401. Removable rim for tractor wheels. H. C. Waite, Chicago, Ill., assignor to Elgin Tractor Corp., Elgin, Ill., a corporation of New York.
 1,235,421. Tire. S. T. Bottenfield, assignor to The Bottenfield Tire Co.—both of Cleveland, Ohio.
 1,235,458. Tire tread of sheet metal. M. E. Fox, R. L. Ryan, and C. M. Sawyer—all of Winston-Salem, N. C.
 1,235,485. Tire. I. N. Keim, Mount Holly, N. J.
 1,235,528. Automatic self healing inner tube for pneumatic tires. C. L. Crow, Alexander City, Ala.
 1,235,537. Vehicle wheel rim. R. S. Bryant, assignor to The Standard Welding Co.—both of Cleveland, Ohio.

ISSUED AUGUST 7, 1917.

- 1,235,597. Wheel rim and tire construction. H. Raflovich, New York City.
 1,235,621. Vehicle wheel with block rubber and metal tires. H. Weiner, New York City.
 1,235,669. Obstetrical cushion. A. C. Eggers, Brooklyn, N. Y., assignor to The Goodyear's India Rubber Glove Manufacturing Co., a corporation of Conn.
 1,235,670. Non-skid chain attachment for rubber tired wheels. W. H. Falls, Bridgeport, Conn.
 1,235,727. Tire deflation signal. W. W. Robinson, Portland, Me.
 1,235,753. Typewriter platen. N. H. Anderson, Middletown, assignor of one-half to W. A. Lorenz, Hartford—both of Conn.
 1,235,754. Typewriter platen. N. H. Anderson, Middletown, assignor of one-half to W. A. Lorenz, Hartford—both of Conn.
 1,235,755. Noiseless typewriter platen comprising a rubber cylinder on the outer core. N. H. Anderson, East Hampton, assignor of one-half to W. A. Lorenz, Hartford—both of Conn.
 1,235,756. Noiseless typewriter platen. N. H. Anderson, East Hampton, assignor of one-half to W. A. Lorenz, Hartford—both of Conn.

- 1,235,861. Rubber tire casing. H. N. Wayne, assignor to W. J. Ennis—both of Los Angeles, Calif.
 1,235,876. Hose connection for fabric and rubber hose. H. Cave, Elizabeth, assignor to Davis Bournonville Co., Jersey City—both of N. J.
 1,235,877. Tire casing. T. P. Chrisomalis, New York City.
 1,235,878. Hose comprising an outer casing and an inner tube of smaller diameter free to expand to the wall of the casing. W. T. Cole, Newton, Conn., assignor to Fabric Fire Hose Co., a corporation of Conn.
 1,235,890. Case for hypodermic syringes comprising a rubber collar for gripping the hypodermic needle head. A. J. Gilbert, Eufaula, Ala.
 1,235,921. Hose supporter button. R. Parker, assignor to Parker, Stearns & Co.—both of Brooklyn, N. Y.
 1,235,963. Anchoring means for the cord body fabric of tires of the "cord" type. F. S. Dickinson, New York City.
 1,235,965. Vehicle wheel tire. F. Fisher, assignor of one-fourth to A. C. Immer, one-fourth to F. L. Reichert, and one-fourth to W. Selinger—all of Arcadia, Mo.
 1,236,036. Teat cup. C. O. Anderson, Lancaster, Pa.
 1,236,174. Rubber heel. E. J. Hooper, Stoughton, Mass.
 1,236,227. Armored tire structure. C. W. Stewart, Martinsburg, W. Va.
 1,236,251. Non-skid device. P. Balko and A. Kocovsky, Milwaukee, Wis.
 1,236,290. Toy ball comprising a whistle and a rattle, etc. C. O. Griffin, Newbern, N. C.
 1,236,301. Vehicle wheel rim. E. N. Hatcher, East Tallassee, Ala.
 1,236,304. Hand stamp comprising an inflatable hollow sphere. R. L. Howell, Rochester, N. Y.
 1,236,310. Automatic life preserver. W. F. Johnson, Riverside, Calif.
 1,236,312. Hose clamp. H. C. Jones, Allentown, N. J.
 1,236,365. Life saving belt. H. B. Rogers, London, England.
 ISSUED AUGUST 14, 1917.
 1,236,411. Tire valve and signal. W. F. Downs, Bay Shore, N. Y.
 1,236,412. Cushion tired wheel. E. F. Dreman, Cleveland, Ohio.
 1,236,490. Cushion tire. R. D. Shirey, Woodland, Pa.
 1,236,506. Tire shoe or casing. G. S. Van Voorhis, Boston, Mass.
 1,236,534. Reinforced air tube for pneumatic tires. J. W. Blodgett, Chicago, Ill.
 1,236,619. Stopper for water bags, bottles, and the like. M. T. Steele, Brooklyn, N. Y.
 1,236,671. Non-skid device. H. Carroll, Boone, Iowa.
 1,236,689. Rain coat. M. C. Doubles, Richmond, Va.
 1,236,821. An improvement in wheel tires. W. T. Carey, Cranston, R. I.
 1,236,924. Arch supporter. M. Golden, Boston, Mass.
 1,237,041. Air valve for pneumatic tires for bicycles or the like. E. A. Hilding, Lidköping, Sweden.
 1,237,155. Rubber tire. M. E. Baxter, Steubenville, Ohio.

THE UNITED KINGDOM.

ISSUED JUNE 27, 1917.

- 105,894. Rubber-surfaced paving blocks. G. Anderson and Leyland & Birmingham Rubber Co., Leyland, near Preston.
 105,940. Gutta percha filled joint-making washers. C. J. Beaver, Range-moor, Crescent Road, Hale, and E. A. Claremont, Broom Cottage, High Legh—both in Cheshire.
 105,955. Reservoir pen. A. Coats, Hayfield, Castlehead, Paisley.
 105,961. Auxiliary pneumatic vehicle springs formed of short lengths similar to pneumatic tires. L. D. Jones, 134 Vine street, Bridgeport, Connecticut, U. S. A.
 105,977. Pneumatic cushions for air craft. T. Sloper, Southgate, Devizes, Wiltshire.
 ISSUED JULY 4, 1917.
 106,038. Infants' soother. Hasting, Lang & Co. and H. W. Byrom, 1 Roman street, Church street, Manchester.
 106,068. Tourniquet comprising a rubber tube. J. T. Brierley, "Highfield," and Leyland & Birmingham Rubber Co., Golden Hill Works—both in Leyland, Lancashire.
 106,126. Wheel tire rims. F. W. Baker, 59 Hagley Road, and J. S. Foley, 17 Beale street—both in Stourbridge.
 106,134. Golf ball. W. Taylor, "Southlea," Elms Road, Knighton, Leicester.
 106,157. Anti-rattlers for doors, etc., consisting of studs of resilient material forced through countersunk holes in plates. Daimler Co. and A. E. Berriman, Daimler Works, Coventry.
 106,198. Sock suspender. A. J. Lister, Marlborough House, Clifton Road, Ilkley, Yorkshire.

ISSUED JULY 11, 1917.

- 106,278. Inhaling device. Dragerwerk, H. & B. Drager, 53 Moislinger Allee Lubeck, Germany.
 106,295. Rubber mud-shield for boot heels. A. E. MacDonald, "Pegli," St. John's Road, Golder's Green, London.
 106,321. Rubber-faced motorcycle driving belt. G. Warwick, 80 Cobham Road, Seven Kings, Essex, and A. P. Crouch, 106 Cannon street, London.
 ISSUED JULY 18, 1917.
 106,402. Valves. C. A. Iorns, 4750 Cook avenue, St. Louis, Missouri, U. S. A.
 106,476. Method of coupling fabric hose sections. N. B. Braley, 14 West Granite street, Butte, Montana, U. S. A.

- 106,496. Wheel tires. M. H. Cleaver, 122 Liberty street, Manhattan, New York, U. S. A.
- 106,511. Artificial hands with rubber finger tips. E. W. Hogg, 23 Brandreth Road, Balham, Surrey.
- 106,534. Branch mat of elastic waterproof material. A. R. M. Sankey, Polygon House, Southampton, and A. J. M. Smith, "Edgehill," Peak Hill, Sydenham, London.
- 106,550. Tire rim. H. W. Van Meeteren, 58 Poplar Road, Edgbaston; A. Edwards, 44 Milcote Road, Bearwood, and H. Headley, "Merton," Oxford Road, Moseley—all in Birmingham.
- 106,559. Crutch comprising a pneumatic tired wheel engaged by the arm rest. H. C. Sparrow, 123 Mallinson Road, Clapham Junction, London.

ISSUED JULY 25, 1917.

- 106,588. Girdle and brassiere having vertical elastic inserts down the back. B. Prince and H. Prince—both of 38 East One Hundred and Twenty-sixth street, New York City, U. S. A.
- 106,609. Electric incandescent lamp comprising rubber ring. C. Ammentorp, 23 St. Pederstraede, Copenhagen.
- 106,645. Aeronautics. W. B. Quick, "Belmont," Station Road, Wootton, Isle of Wight.
- 106,681. Kinematograph apparatus comprising rubber tubing. A. E. Walslam, A. Bennett, and A. H. F. Perl—all of 60 Doughty street, London.
- 106,729. Bottle with rubber stopper. I. G. Warren, Glen Rosa, Cumberhills, Duffield, Derbyshire, and F. H. Rogers, Broad Sanctuary Chambers, Westminster.

THE DOMINION OF CANADA.

ISSUED APRIL 30, 1917.

- 176,156. Pneumatic tire. W. J. G. Rogers, Montreal, Quebec.
- 176,184. Life preserver. The National Life Preserver Co., assignee of O. A. Youngren—both of Sheridan, Wyoming, U. S. A.
- 176,206. Brake lining. E. E. Waite and Standard Woven Fabric Co., assignee of a half interest—both of Framingham, Massachusetts, U. S. A.
- 176,280. Pneumatic cushion heel. O. Mussinan, New York, New York, U. S. A.
- 176,311. Teat cup. H. Stewart, Galt, Ontario.
- 176,323. Tire applicator. I. Wyatt, Melita, Manitoba.
- 176,351. Reinforced air tube for tires. The Western Canadian Enterprises, Limited, Vancouver, assignee to T. H. B. Gaynor, Middle Park, Victoria—both in Australia.
- 176,405. Safety purse comprising an elastic support. F. W. De Blieux, Chicago, Illinois, U. S. A.
- 176,532. Rubber heel. F. Berenstein, Chelsea, Massachusetts, U. S. A.
- 176,597. Waterproof bag for rubbers. J. A. Aristide, Vaillancourt, Ottawa, Ontario.
- 176,604. Reservoir shaving brush. F. W. Zeidler, Jersey City, New Jersey, U. S. A.

THE FRENCH REPUBLIC.

PATENTS ISSUED (WITH DATES OF APPLICATION).

- 482,932 (September 20, 1916). Improvements in the manufacture of hard rubber receivers and similar articles. W. W. Weiling.
- 482,960 (September 23, 1916). Protective pneumatic tire for carriage wheels. U. Favretti.
- 482,963 (September 25, 1916). Improvements in pneumatic tires. J. H. Christian.
- 482,994 (September 26, 1916). Device for inflating life-belts. W. G. Brokan.
- 482,995 (September 26, 1916). Improvements in wheels and rims. F. A. Scott.
- 483,006 (September 27, 1916). Capsule for compressed or liquid gas serving to inflate life-belts and pneumatic tires, as well as for other purposes. W. G. Brokan.
- 483,059 (September 29, 1916). Crutches for the wounded. G. A. Valland.

TRADE-MARKS.**THE UNITED STATES.**

- 92,308. The words MME. LEEMAX—sanitary clothing. A. Stein & Co., Chicago, Ill.
- 92,614. The word ECCO—rubber-covered electrical wires and cables. The Electric Cable Co., Bridgeport, Conn.
- 94,468. The word BUCKSKIN—rain coats made of textiles treated with waterproofing materials. American Rubber Co., Boston, Mass.
- 96,373. A white bar between two blue bars all of equal width—drug sundries. United States Rubber Co., New Brunswick, N. J., and New York City.
- 96,374. A white bar between two blue bars all of equal width—rubber cement. United States Rubber Co., New Brunswick, N. J., and New York City.
- 96,375. A white bar between two blue bars all of equal width—rubber horseshoes and horseshoe pads. United States Rubber Co., New Brunswick, N. J., and New York City.
- 96,376. A white bar between two blue bars all of equal width—pneumatic pillows. United States Rubber Co., New Brunswick, N. J., and New York City.
- 96,377. A white bar between two blue bars all of equal width—rubber pails and hat bags. United States Rubber Co., New Brunswick, N. J., and New York City.
- 96,379. A white bar between two blue bars all of equal width—insulated wire and friction tape. United States Rubber Co., New Brunswick, N. J., and New York City.
- 96,380. A white bar between two blue bars all of equal width—powdered soapstone. United States Rubber Co., New Brunswick, N. J., and New York City.
- 96,381. A white bar between two blue bars all of equal width—furnace-bulbs, basin plugs, force cups, horn bulbs, plant sprinklers, and bath sprays. United States Rubber Co., New Brunswick, N. J., and New York City.

- 96,382. A white bar between two blue bars all of equal width—gaskets, lamp connections, automobile bumpers, pump valves, spiral packings, sheet packings, piston packings, rubber belting, rubber hose reinforced with fabric, air brake hose, pipe tester rings, fuller balls, siphon valve washers, tank balls, rubber elbows, rubber washers, jar rings, tire relines, blow-out patches, inner tube patches, tire inner tubes and ties. United States Rubber Co., New Brunswick, N. J., and New York City.
- 96,418. A white bar between two blue bars all of equal width—rubber boots, rubber and fabric boots, boots and shoes having fabric uppers and composition soles, rubber coats, overalls, leggings, hats, gloves, mittens, swimming vests, aprons, heels and soles. United States Rubber Co., New Brunswick, N. J., and New York City.
- 96,994. Representation of a gloved hand holding an instrument within a pneumatic tire—rubber tires and tubes. The Miller Rubber Co., Akron, Ohio.
- 98,187. The white letters G. B. Co. on a black diamond-shaped background—chewing gum. George Brothers Co., Manitowoc, Wisconsin.
- 98,392. The words EST'S S. S. 1880 within a wreath and beside it the word KOMFORT—shoes made of leather, rubber, canvas or any combination of the three. Albert J. Schmidt, Pittsburgh, Pennsylvania.
- 99,420. The word McELWAIN—boots and shoes with rubber soles or heels. W. H. McElwain Co., Boston, Mass.
- 99,576. The word MUTUAL within a white diamond with a black border—tires, tubes and mechanical rubber goods. The Mutual Motor Stores Co., Cleveland, Ohio.
- 100,219. The word MUTUAL within a diamond-shaped design—rubber cement and tire tape. The Mutual Motor Stores Co., Cleveland, Ohio.
- 102,401. Representation of a shield—clothing including rubber shoes. J. Bacon & Sons, Louisville, Ky.
- 102,897. The word REPUTATION—druggists' sundries. United Drug Co., Boston, Mass.
- 102,898. The word FIRSTAID—druggists' sundries. United Drug Co., Boston, Mass.
- 102,993. Representation of an outdoor scene showing repair being made to an auto tire above which is the compound word AUTO-SEAL and a bird holding a can of the material—a compound for closing holes or punctures in pneumatic tires. National Chemical Co., Clinton, Iowa.
- 103,713. The word JIFFY—cementless patches for mending pneumatic inner tubes for tires and like inflated articles.
- 103,720. The word AIR-IN—raincoats. Kling Bros. & Co., Chicago, Ill.
- 104,004. The word TOESAN—composition shoes and rubber overshoes. Batterman Rubber Co., Boston, Mass.
- 104,543. Representation of a soldier and the compound word Soldier-Boy within an oval—rubber boots and shoes. The Beacon Falls Rubber Shoe Co., Beacon Falls, Conn.
- 104,557. The word ANGLE—rubber tires, casings, and tubes. The Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio.
- 104,558. The word ANGLE—rubber and composition soles and heels. The Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio.
- 104,559. The word RUNNER—rubber tires, casings, and tubes. The Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio.
- 104,560. The word RUNNER—rubber and composition soles and heels. The Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio.

THE UNITED KINGDOM.

- 377,264. The word DIVIDATAN within a design—condenser rubber leathers, etc. E. Handley, Leventhorpe Leather Works, Loco Mill Lane, Bradford, Yorkshire.
- 377,327. Representation of a moose's head above the words THE MERCHANTS RUBBER CO., LTD.—footwear made of rubber or partly of rubber. The Merchants Rubber Co., Ltd., Kitchener, Province of Ontario, Canada.
- 377,329. A representation of Jacques Cartier in an oval around which appears the name of the company—footwear made of rubber or partly of rubber. The Canadian Rubber Co. of Montreal, Ltd., corner of Notre Dame street East and Papineau avenue, Montreal, Canada.
- 377,615. The word NAVITE—electric insulating material or preparations made mainly of india rubber. Alfred Graham & Co., St. Andrew's Works, Crofton Park, London, S. E.
- 375,705. The word GOULAC—filler for india rubber compositions. American Gum Products Co., 200 Fifth avenue, New York, U. S. A.
- 377,911. The word ROLVA—waterproofing compounds. The Viva Co., 112, Moss Lane East, Manchester.
- 377,964. The word GEM above a design with the words NORTH BRITISH RUBBER CO., LIMITED, Edinburgh, encircling a representation of a sword and scales—hair combs. The North British Rubber Co., Limited, Castle Mills, Fountainbridge, Edinburgh, Scotland.
- 378,142. Representation of a deer within a circular design above which are the words OKAPI BRAND—packing and hose of all kinds. Hamel & Horley, Limited, London House, 35, Crutched Friars, London, E. C., 3.

THE DOMINION OF CANADA.

- 22,475. The word ACORN and the representation of an acorn at each end of the word—rubber tires. Acme Tire & Rubber Co., Limited, Toronto.
- 22,476. Representation of an automobile tire with an oak tree in the center and the words ROYAL OAK TIRES—rubber tires. Acme Tire & Rubber Co., Limited, Toronto.
- 22,514. The word THERMOID—brake linings and packing. Thermoid Rubber Co., Hamilton Township (Trenton), Mercer County, New Jersey, U. S. A.

DESIGN.**THE UNITED STATES.**

- 51,036. Toy balloon. Term 7 years. Patented May 15, 1917. J. B. Amherst, Los Angeles, Calif.

Review of the Crude Rubber Market.

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NEW YORK.

AUGUST is usually a quiet period in the crude rubber market and the month just passed has been no exception to the general rule. The large buyers have shown no interest whatever in the spot market and futures being firmly held at a premium above spot prices were therefore not attractive. A year ago in August the market reached its lowest level, with First latex spot at 56½ cents, and futures covering the ensuing year were freely sold at 55 cents and even less. The upward swing that commenced in September last carried both First latex spot and futures to 84 cents on December 7, 1916, when the market declined. The experience gained by the sellers of futures at the low values of a year ago doubtless explains the negative attitude of the producers at the present time.

Plantations have interested smaller manufacturers who have taken advantage of the comparatively cheap nearby rubber and bought freely during the month. Inquiries have been numerous for all positions up to the end of next year, but sellers refused to make concessions and prices have ruled firm with a tendency to advance. Spot prices are about 1 cent to 1½ cents lower than a month ago, First latex being quoted 65½ cents and Smoked sheet ribbed 64½ cents on August 28, with futures nominally 67 cents for Latex and 65½ cents for Ribs. Brazilian Paras have been firm and practically unchanged with the exception of Upriver fine that was forced to 70½ cents during the month. Stocks of Caucho ball are plentiful and cheap, but the demand has been small. Africans were practically neglected, with the interest centered on Accra flake and Rio Nunez ball, the latter selling at the unusual price of 65 cents. Centrals continue to be scarce at firm prices.

The bogey of overproduction is dispelled by E. L. Killick, a well-known English authority, who sums it up as follows: "According to Rickinson, the world's production of rubber during the past three years was under:

	Plantation.	Brazil.	Rest.	Totals.
1914	71,380	37,000	12,000	120,380
1915	107,867	37,220	13,615	158,702
1916	152,650	36,500	12,448	201,598

"For 1917 the same authority gives the following estimate:

	Plantation.	Brazil.	Rest.	Totals.
1917	192,000	37,000	13,000	242,000

"It will be seen that plantation rubber increased about 50 per cent in 1915 and 1916, while the increase in 1917 may be only 25 per cent. After this year the rate of increase will rapidly decline as the diminishing area of rubber comes into bearing and by 1921 the increase may be almost negligible. In the light of such greatly increased consumption it is significant that the average price of plantation rubber should have risen from 2s. 6d. in 1915 to 2s. 10¼d. in 1916, while for the expired portion of the current year the average is over 3s. The lesson of these figures is that during two years of enormously increased production there has been corresponding expansion of the world's consumption, and it is clear that if the demand continues to increase at the same rate there is likely to be, a few years hence, not a surplus but an actual shortage of rubber."

In view of the foregoing, the following official figures of United States crude rubber imports are interesting: For the fiscal year ended June 30, 1917, the United States imported 333,373,711 pounds of crude rubber, compared to 267,775,557 pounds in 1916, and 172,068,428 pounds in 1915.

LONDON.

The London market has lacked inspiration from American buyers and quiet conditions have prevailed with firm prices

that show little change during the month. On August 1, Standard crepe spot was 29¼d. and Smoked sheet 29d. The same grades were quoted 31d. and 29¼d. on August 28. The sentiment is strong against selling futures, spot and nearby being the only positions that are really considered in this market at the present time. London and Liverpool imports for June were 7,390 tons compared with 6,700 tons for May. Reexports for June were 4,750 tons, against 6,093 tons for May.

SINGAPORE.

During the first part of August the market developed a firm tone, despite the rather dull sentiment that prevailed. A tendency to decline was noticed after the second week and the market eased off, closing with lower prices. At the auctions held July 27, August 3, 11, 18 and 24, the average prices realized were: First latex crepe 53.8 cents, compared to 56.09 cents last month; Smoked sheet ribbed 53.88 cents, compared to 55.14 cents a month ago. The total amount sold was 2,335 tons against 1,628 for last month.

NEW YORK SPOT QUOTATIONS.

	Sept. 1, 1916.	Aug. 1, 1917.	Aug. 28, 1917.
PLANTATION PARAS—			
First-latex crepe	56½ @	67 @	66 @
*Hevea first crepe	54½ @	65 @	63 @
Amber crepe No. 1, gristly blanket	53½ @	64 @	62 @
Amber crepe No. 2	@	63 @	61 @
Amber crepe No. 3	@	62 @	60 @
Amber crepe No. 4	52 @	62 @	59 @
Brown crepe, thick clean	@	61 @	58 @
Brown crepe, thin clean	@	59 @	56 @
Brown crepe, thin specky	@	48 @	46 @
Smoked sheet, ribbed standard quality	56 @	67 @	65 @
*Hevea ribbed smoked sheets	@	64 @	64 @
Smoked sheet, plain standard quality	@	64 @	64 @
*Hevea plain or smooth smoked sheets	@	62 @	62 @
Unsmoked sheet, standard quality	@	62 @	63 @
*Hevea unsmoked sheets	@	49 @	48 @
Colombo scrap, No. 1	@	45 @	46 @
Colombo scrap, No. 2	@	45 @	46 @
BRAZILIAN PARAS—			
Upriver fine	71½ @	68 @	68 @
Upriver medium	@	63 @	62 @
Upriver coarse	42½ @	48½ @	48 @
Upriver weak fine	42½ @	59 @	59 @
Upriver caucho ball	60 @	61 @	40 @
Islands fine	@	58 @	61 @
Islands medium	@	30 @	29½ @
Islands coarse	28 @	55 @	@
Islands weak fine	33 @	32½ @	32 @
Cameta	36 @	39 @	37 @
Lower caucho ball	@	66 @	65 @
Peruvian fine	@	66 @	66 @
Tapajos fine	@	39½ @	38½ @
Tapajos caucho ball	@	@	@
AFRICANS—			
Accra flake	35 @	@	30 @
Niger flake	35 @	@	30 @
Benguella, extra seconds, 28%	38 @	39 @	39 @
Benguella, No. 2, 32½%	35 @	37½ @	38 @
Congo prime, black upper	@	56 @	55 @
Congo prime, red upper	@	53 @	53 @
Rio Nunez ball	@	64 @	65 @
Rio Nunez sheets and strings	@	64 @	65 @
Conakry niggers	@	65 @	65 @
Massai sheets and strings	@	@	65 @
CENTRALS—			
Central scrap	@	42 @	41 @
Central scrap and strip	@	41 @	40 @
Central wet sheet	@	31 @	30 @
Corinto	39 @	43 @	42 @
Esmeralda sausage	39 @	43 @	42 @
Guayule	32 @	33 @	32 @
MANICORAS—			
Ceara negro heads	@	44 @	48 @
Ceara scrap	@	27 @	28 @
Manicoba special	42½ @	45 @	45 @
Manicoba extra	@	42½ @	42 @
Manicoba regular	@	37½ @	40 @
Mangabeira thin sheet	37½ @	39 @	39 @
Mangabeira thick sheet	@	35 @	35 @

* Rubber Association of America nomenclature.

BALATA—	Sept. 1, 1916.	Aug. 1, 1917.	Aug. 28, 1917.
Balata block	50 @	58 @ 64	68 @
Surinam sheet	79 @	85 @ 92	78 @

EAST INDIAN—	1917.*	1916.	1915.
Assam crepe	38 @	63 @	59 @
Assam onions	@	61 @	58 @
Penang block scrap	@	41 @	44 @
Pontianak pressed	6½ @	18 @	20 @
Bandjermassin	8 @	11 @	13 @
Gutta Siak	17 @	19½ @	21 @
Gutta percha, red Macassar	2.50 @	2.30 @	2.00 @

COMPARATIVE NEW YORK PRICES FOR AUGUST.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows:

"The market for commercial paper has continued about the same through August as in July, the demand being spasmodic though rather better, and rates on the best rubber names 5@5½ per cent, and those not so well known 6@6½ per cent."

	1917.*	1916.	1915.
Upriver, fine	\$0.69 @ .70	\$0.65 @ .68	\$0.56 @ .59
Upriver, course .....	.47 @ .48	.39 @ .40	.42 @ .44
Islands, fine .....	.67 @ .68	.57 @ .59	.50 @ .52
Islands, course .....	.29 @ .30	.27 @ .28	.27 @ .28
Cameta .....	.31 @ .33	.32 @ .33	.29 @ .31

*Figured only to August 25.

MARKET CABLE SERVICE FROM SINGAPORE.

The following reports of the weekly auctions held at Singapore have been cabled by The Waterhouse Co., Limited:

Date.	Crêpe. Price per lb.	Smoked Sheet. Price per lb.	Tons Sold.	Market.
July 27.....cents	55.67	55.25	626	Firmer.
Aug. 3.....	55.25	55.67	470	Firm, but not advanced.
Aug. 11.....	53.85	54.40	328	Dull and declining.
Aug. 18.....	49.85	52.27	406	Opened and closed weak.
Aug. 24.....	\$2.70	\$1.85	505	Opened and closed weak.

MARKET CABLE SERVICE FROM LONDON.

The following market report has been cabled from London:

	Standard Crêpe.	Smoked sheets Rubber.	Market.
July 30	30d	29½d	Unsettled.
August 6	30d	29½d	Dull.
August 13	29½d	28½d	Nominal prices.
August 20	29½d	28½d	Irregular.
August 27	31½d	29½d	Quiet.

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [July 19, 1917]:
The weekly rubber auction opened yesterday with rather a poor demand, there being very few buyers in the market, and prices for the leading grades show a slight decline as compared with last week. The top price for fine pale crepe was \$1 down at \$132 (paid for one lot only) and that for ribbed smoked sheet \$3 down at \$128. Of plain sheet, smoked and unsmoked, there was again very little on offer, and only a few lots were sold. For brown and dark crepes there was not much inquiry, and prices show a drop averaging about \$5 per picul. The quantity sold was 441 tons, out of a total of 742 tons cataloged.

The following was the course of values:

	In Singapore per Picul.*	Sterling Equivalent per Pound in London.	Equivalent per Pound in Cents.
Sheet, fine ribbed smoked.....	\$122@128	2/ 6½ @ 2/ 7½	51.85 @ 54.30
Sheet, good ribbed smoked.....	112@121	2/ 4 @ 2/ 5½	47.60 @ 51.43
Sheet, plain smoked.....	104@117	2/ 2½ @ 2/ 5½	44.20 @ 49.73
Sheet, ribbed unsmoked.....	113@115	2/ 4¼ @ 2/ 4¾	48.03 @ 48.88
Sheet, plain unsmoked.....	112@...	2/ 4 @	47.60 @
Crêpe, fine pale.....	128@132	2/ 7¾ @ 2/ 8½	54.40 @ 56.10
Crêpe, good pale.....	116@125	2/ 4¾ @ 2/ 5½	49.30 @ 53.12
Crêpe, fine brown.....	110@115	2/ 3¾ @ 2/ 4¾	46.75 @ 48.88
Crêpe, good brown.....	91@108	1/ 11½ @ 2/ 3½	38.68 @ 45.90
Crêpe, dark.....	75@101	1/ 8½ @ 2/ 1½	31.88 @ 42.93
Crêpe, bark.....	60@ 81	1/ 5½ @ 1/ 9½	25.51 @ 34.43
Crêpe, virgin and pressed.....	55@ 90	1/ 4 @ 1/ 11½	23.38 @ 38.25
Scrap, loose.....	66@ 83	1/ 6¾ @ 1/ 9½	28.05 @ 35.28

* Picul = 133½ pounds.

Quoted in S. S. dollars = 2/4 [56.7 cents].

EXPORTS OF INDIA RUBBER FROM MANAOS DURING JULY, 1917.*

	NEW YORK.			
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho. Totals.
Stowell & Co.....	15,376	360	16,222	3,821 36,779
J. Marques	52,106	4,854	24,009	16,900 97,869
Pires Teixeira & Co.....	40,232	2,579	19,763	2,145 64,709
General Rubber Co.....	27,657	2,004	4,814	21,356 55,831
Chamie & Co.....	6,800	.....	26,100	19,050 51,950
G. Fradelizi & Co.....	36,877	821	10,706	502 48,906
Bitar Irmãos .....	.....	.....	2,760	39,750 42,510
Suarez Hermanos & Co., Ltd.	275	8	249	6,458 6,990
Adelbert H. Alden, Ltd.....	5,312	298	660	..... 6,270
Sundries	36,809	2,120	9,781	32,819 81,529
	221,434	14,044	115,064	142,801 493,343
Manaos	142,286	69,385	50,081	221,839 483,591
Totals	363,720	83,429	165,145	364,640 976,934

*No exports to Europe.

IMPORTS AND EXPORTS OF RUBBER AND GUTTA AT SINGAPORE.

IMPORTS.

May 25-31, 1917.

From—	Para Rubber.	Para Rubber for Treatment.	Borneo Rubber.	Gutta Percha.	Gutta Jelutong.
Malay Peninsula—					
Penang	544,000	743,733	.....	.....	.....
Port Swettenham	472,000	573,466	.....	.....	.....
Teluk Anson	262,033	.....	.....	.....	.....
Muar	113,466	.....	.....	.....	.....
Kelantan	86,533	9,600	.....	.....	.....
Port Dickson	44,933	.....	.....	.....	.....
Malacca	17,866	111,866	.....	.....	.....
Rengat	12,266	7,600	.....	.....	.....
Kuantan	5,333	.....	.....	.....	.....
S. Pandjang	1,333	.....	.....	.....	.....
Totals	1,559,763	1,446,265	.....	.....	.....
Borneo—					
Bandjermassin	104,400	.....	.....	14,800	78,133
Pontianak	34,933	.....	533	9,200	8,000
Labuan	20,666	19,066	.....	1,333	4,400
Sandakan	11,466	7,333	.....	.....	.....
Sambas	11,200	.....	.....	.....	.....
Passir	10,800	.....	.....	.....	.....
Jesselton	9,466	.....	.....	.....	.....
Sampit	1,333	.....	2,400	.....	69,333
Singawang	1,333	.....	.....	.....	.....
Kudat	266	4,933	.....	.....	.....
Totals	205,863	31,332	2,933	25,333	159,866
Sumatra—					
Djambi	68,400	.....	.....	.....	.....
Deli	23,066	233,600	.....	.....	.....
Siak	2,133	.....	.....	.....	.....
Indragiri	1,066	.....	.....	.....	.....
Totals	94,665	233,600	.....	.....	.....
Java—					
Batavia	30,933	.....	.....	.....	.....
Sourabaya	17,733	.....	.....	.....	.....
Samarang	4,800	.....	.....	.....	.....
Totals	53,466	.....	.....	.....	.....
Siam—					
Bangkok	666	.....	.....	.....	.....
Burma—					
Mergui	6,800	.....	.....	.....	.....
Other ports	48,533	.....	9,733	266	152,000
Grand Totals	1,969,756	1,711,197	12,666	25,599	311,866

EXPORTS.

May 25-31, 1917.

To—	Para Rubber.	Para Rubber Trans-shipped.	Borneo Rubber.	Gutta Percha.	Gutta Jelutong.
NORTH AMERICA:					
United States—					
New York	183,866	37,900	.....	.....	.....
Akron	86,666	.....	.....	.....	.....
Totals	264,532	37,900	.....	.....	.....
EUROPE:					
United Kingdom—					
England—					
Liverpool	515,066	101,066	.....	34,133	22,400
London	120,266	309,600	.....	2,133	.....
France (Marseilles)	195,466	.....	.....	.....	.....
Totals	830,798	410,666	.....	36,266	22,400
Grand Totals	1,095,330	448,566	.....	36,266	22,400

IMPORTS.

June 1-28, 1917.*

From—	Para Rubber.	Para Rubber for Treatment.	Borneo Rubber.	Gutta Percha.	Gutta Jelutong.
Malay Peninsula—					
Port Swettenham	1,593,600	.....	.....	.....	.....
Teluk Anson	778,200	.....	.....	.....	.....
Muar	737,733	.....	.....	.....	.....
Malacca	722,633	1,134,266	.....	.....	.....
Penang	561,866	133,466	.....	.....	.....
Port Dickson	158,266	.....	.....	.....	1,200
Kelantan	154,400	.....	.....	.....	.....
Kuantan	47,066	.....	.....	.....	.....
Rengat	17,333	22,533	.....	.....	.....
S. Pandjang	3,466	.....	.....	.....	.....
Trengganu	666	.....	.....	.....	.....
Totals	4,775,229	1,290,265	.....	.....	1,200

June 1-28, 1917.*

From—	Para Rubber.	Para Rubber for Treatment.	Borneo Rubber.	Gutta Percha.	Gutta Jelutong.
Borneo—					
Pontianak	101,866	11,333	2,666	62,666	32,933
Pandjermassin	95,865	28,533	.....	84,933	34,666
Sibu	74,800	.....	400	10,273	296,666
Sambas	47,066	.....	.....	1,066	15,733
Sarawak	38,333	.....	.....	.....	216,266
Iabuan	36,000	.....	5,066	1,733	35,333
Iesselon	20,266	.....	.....	1,066	15,733
Sandakan	13,866	12,000	533	.....	.....
Kudat	9,333	12,766	.....	.....	.....
Passir	8,333	.....	.....	.....	.....
Simekawang	6,933	.....	.....	.....	.....
Samarinda	6,800	.....	5,600	1,866	.....
Totals	459,662	64,632	14,265	163,603	647,330
Sumatra—					
Djambi	231,466	.....	.....	400	.....
Deli	106,133	244,933	.....	.....	.....
Palembang	64,133	.....	533	1,066	104,133
Indragiri	6,666	.....	.....	.....	4,800
Bengkalis	3,600	.....	.....	.....	.....
Muntok	3,466	.....	.....	.....	.....
Belawan	3,333	141,600	.....	.....	.....
Siak	2,933	.....	.....	.....	.....
Asahan .....	.....	28,400	.....	.....	.....
Totals	421,730	414,933	533	1,466	108,933
Java—					
Batavia	30,266	.....	.....	.....	.....
Sourabaya	29,333	.....	.....	.....	.....
Samarang	1,733	.....	.....	.....	.....
Total	61,332	.....	.....	.....	.....
Siam—					
Patari	1,466	.....	.....	.....	.....
Bangkok	533	.....	.....	.....	.....
Total	1,999	.....	.....	.....	.....
Burma—					
Mergui	3,333	.....	.....	.....	.....
Other ports	239,333	60,000	5,333	8,133	.....
Grand Totals	5,962,618	1,829,830	20,131	173,202	757,463

EXPORTS.

June 1-28, 1917.*

To—	Para Rubber.	Para Rubber Trans-shipped.	Borneo Rubber.	Gutta Percha.	Gutta Jelutong.
NORTH AMERICA:					
United States—					
New York	7,666,400	1,264,133	.....	285,200	846,400
Akron	5,329,600	410,933	.....	.....	.....
Seattle	1,380,266	306,000	.....	156,800	731,866
Boston	459,066	.....	.....	.....	.....
San Francisco	96,533	.....	.....	44,800	2,124,533
Canada—					
Toronto	202,800	.....	.....	.....	.....
Montreal	145,466	.....	.....	.....	.....
Vancouver	20,066	.....	.....	.....	.....
Totals	15,309,197	1,981,066	.....	486,800	3,702,799
EUROPE:					
United Kingdom—					
England—					
Liverpool	1,452,266	.....	.....	102,933	29,600
London	1,201,733	2,741,466	.....	203,600	8,666
France (Marseilles)	170,400	.....	.....	22,400	.....
Italy (Genoa)	890,400	.....	.....	.....	.....
Totals	3,714,799	2,741,466	.....	328,933	38,266
Grand Totals	19,023,996	4,722,532	.....	815,733	3,741,065

* Six days missing.

STRAITS SETTLEMENTS RUBBER EXPORTS.

The export of plantation rubber from Straits Settlements ports in the month of June, as officially reported by cablegram from Singapore, amounted to 8,775 tons. Of this total, 482 tons were transshipments from adjacent countries. Appended are the comparative statistics for three years:

	1915.	1916.	1917.
January	2,576	4,443	3,562
February	2,741	3,359	6,495
March	2,477	4,481	8,299
April	1,978	4,219	6,103
May	3,588	3,274	6,282
June	2,249	3,836	8,775
Totals	15,609	28,612	39,516

The above figures include transshipments from various places in the neighborhood of the Straits Settlements, such as Borneo, Java, Sumatra and the Malay States other than the Federated Malay States.

PLANTATION RUBBER FROM THE FAR EAST.

TOTAL EXPORTS FROM MALAYA.

(From January 1, 1917, to dates named, excluding all foreign transshipments. Reported by Barlow & Co., Singapore.)

To—	From				Totals.
	Singapore. May 31, 1917.	Malacca. May 31, 1917.	Penang. April 30, 1917.	Port Swettenham. June 21, 1917.	
United Kingdom..lbs.	22,198,963	2,081,978	10,197,667	18,800,399	53,279,007
The Continent	7,418,522	.....	47,067	.....	7,465,589
Japan	1,719,511	.....	.....	.....	1,719,511
Ceylon	152,334	.....	223,732	538,064	914,130
U. S. A. and Canada	48,309,613	.....	6,220,200	553,264	55,083,077
Australia	249,600	.....	.....	.....	249,600
China (Hongkong)..	.....	.....	.....	47,052	47,052
	80,048,543	2,081,978	16,688,666	19,938,779	118,757,966
Same period, 1916	51,915,487	2,251,734	10,879,900	10,439,711	75,486,832
Same period, 1915	28,800,301	3,864,357	8,230,797	14,671,501	55,566,956
Same period, 1914	15,195,659	1,772,527	5,398,000	13,959,414	36,325,600

PLANTATION RUBBER EXPORTS FROM JAVA.

To—	May		Five Months Ending May.	
	1916.	1917.	1916.	1917.
HOLLAND:				
Hevea (to order) pounds	185,920	.....	215,040	.....
GREAT BRITAIN:				
Ficus .....	.....	.....	8,470	4,572
Hevea	64,960	.....	2,432,640	2,172,800
Ceara .....	.....	.....	16,427	12,707
Castilloa .....	.....	.....	18,832	13,272
Totals	64,960	.....	2,478,369	2,203,351
UNITED STATES:				
Ficus .....	.....	.....	32,087	2,578
Hevea	1,169,280	3,532,480	6,596,800	14,400,960
Ceara .....	.....	.....	11,114	185
Castilloa .....	.....	4,083	.....	11,143
Totals	1,169,280	3,536,563	6,640,001	14,414,866
SINGAPORE:				
Ficus	2,924	1,813	20,720	8,840
Hevea	358,400	282,480	1,771,840	1,516,480
Ceara	6,204	15,378	18,016	27,460
Castilloa .....	.....	2,599	2,365	3,405
Totals	367,528	302,270	1,812,941	1,556,185
JAPAN:				
Hevea	2,240	.....	51,520	.....
OTHER COUNTRIES:				
Ficus	1,120	.....	2,792	.....
Hevea	96,320	4,480	161,280	20,160
Totals	97,440	4,480	164,072	20,160

EXPORTS OF CEYLON GROWN RUBBER.

(From January 1 to July 2, 1917. Compiled by the Ceylon Chamber of Commerce.)

To—	1917.	1916.
United Kingdom	pounds 14,770,643	9,670,162
France	1,591,595	854,320
Italy	387,535	.....
Russia	229,673	248,874
Western Australia .....	.....	56
South Australia .....	.....	27
Victoria	198,353	336,016
New South Wales	84,829	82,579
United States	9,861,615	13,384,570
Canada and Newfoundland	239,694	2,240
India	131	678
Straits Settlements	28	.....
Japan	40,288	155,189
Totals	27,404,411	24,734,684

Same period, 1915, 20,037,627 pounds; same period 1914, 16,088,110. The export figures of rubber, given in the above table for 1914, include the imports reexported. (These amount to 1,968,030—1,669,729 pounds from the Straits, and 286,686 pounds from India.) To arrive at the total quantity of Ceylon rubber exported for that year deduct these imports from the total exports. The figures for 1916 and 1917 are for Ceylon rubber only.

CRUDE RUBBER ARRIVALS AT THE PORT OF NEW YORK.

The following statistics are not complete, due to Government orders prohibiting access to the records.

[The Figures Indicate Weight in Pounds.]

	Fine.	Medium.	Coarse.	Cauch.	Cameta.	Totals.
PARA.						
JULY 15.—By the <i>Tricolor</i> —Para.						
General Rubber Co.	29,100	11,200				40,300
JULY 21.—By the <i>Vindegen</i> —Manaos.						
General Rubber Co.	116,500	2,240	116,500			235,240
Meyer & Brown.	59,600	67,500	6,300	64,400		197,800
H. A. Astlett & Co.	49,840	5,600	64,960	68,320		188,720
JULY 26.—By the <i>Gen. H. F. Hodges</i> —Mollendo.						
Muller, Schall & Co.	17,395	935				18,330
JULY 28.—By the <i>Tungus</i> —Para.						
W. R. Grace & Co.	8,600	750				9,350
Henderson & Korn.	24,200		5,600	4,500		34,300
Meyer & Brown.	39,400	2,600	10,700	27,500		80,200
General Rubber Co.	11,200		2,240			13,440
H. A. Astlett & Co.	42,560	1,120	8,960	126,560		179,200
AUGUST 6.—By the <i>A. W. Schmer</i> —Para.						
Henderson & Korn.	28,500	2,950	19,620	43,750	64,200	159,540
W. R. Grace & Co.	45,973	18,062	5,403	1,100	18,150	88,688
General Rubber Co.	35,800					35,800
Meyer & Brown.	17,000	1,800	5,500	18,200		42,500
H. A. Astlett & Co.	28,000	2,240	6,720	28,000		64,960
Aldens' Successors, Ltd.	2,000	300	700			3,000
Arnold & Zeiss.	24,000	2,300	5,300	3,000		34,600
AUGUST 8.—By the <i>Colon</i> —Arequipa.						
W. R. Grace & Co.				10,061		10,061
AUGUST 20.—By the <i>Tampico</i> —Manaos.						
W. R. Grace & Co.	9,760	640	285	34,870		45,555
General Rubber Co.	44,800					44,800
H. A. Astlett & Co.	12,320		2,240	8,960		23,520
AUGUST 23.—By the <i>Wagland</i> —Para.						
W. R. Grace & Co.	56,797		8,781	22,482	6,534	94,594
Henderson & Korn.	31,200	3,540	9,840	11,200	7,510	63,290
General Rubber Co.				123,200		123,200
H. A. Astlett & Co.	146,720	2,240	23,500	124,320		296,780
Arnold & Zeiss.	37,500	2,400	25,000	2,200	3,800	70,900
AUGUST 27.—By the <i>Imperial</i> —Arequipa.						
W. R. Grace & Co.	9,055		1,422	23,473		33,960

PLANTATIONS.

TO NEW YORK.

	POUNDS.
JULY 3.—By the <i>Michigan</i> —London:	
Fred Stern & Co.	21,750
JULY 3.—By the <i>Carnarvonshire</i> —Far East:	
Fred Stern & Co.	26,880
JULY 3.—By the <i>Kumeria</i> —Far East:	
Fred Stern & Co.	13,440
JULY 9.—By the <i>Bawean</i> —Batavia:	
General Rubber Co.	279,000
JULY 10.—By the <i>Skincut Maru</i> —Singapore:	
General Rubber Co.	1,321,600
JULY 11.—By the <i>Rondo</i> —Batavia:	
J. T. Johnstone & Co.	8,587
JULY 11.—By the <i>City of Athens</i> —Singapore:	
J. T. Johnstone & Co.	4,480
JULY 12.—By the <i>Peendijk</i> —Batavia:	
J. T. Johnstone & Co.	27,746
JULY 13.—By the <i>Rupat</i> —Batavia:	
J. T. Johnstone & Co.	36,480
JULY 13.—By the <i>Kangas</i> —Batavia:	
J. T. Johnstone & Co.	59,485
JULY 13.—By the <i>Wakasa Maru</i> —Far East:	
Fred Stern & Co.	4,480
JULY 17.—By the <i>Kandahar</i> —Colombo:	
Fred Stern & Co.	17,920
JULY 22.—By the <i>China</i> —Singapore:	
General Rubber Co.	280,000
JULY 23.—By the <i>Unkai Maru</i> —Singapore:	
General Rubber Co.	757,100
Meyer & Brown.	201,600
JULY 24.—By the <i>Malakuta</i> —London:	
Meyer & Brown.	22,500
JULY 31.—By the <i>Euryades</i> —Ceylon:	
J. T. Johnstone & Co.	47,432
AUGUST 1.—By the <i>Bawean</i> —Batavia:	
J. T. Johnstone & Co.	489,402
AUGUST 2.—By the <i>Kwanto Maru</i> —Far East:	
Fred Stern & Co.	11,200
Rubber Trading Co.	15,000
AUGUST 2.—By the <i>Minnehaha</i> —London:	
Fred Stern & Co.	107,520
Rubber Trading Co.	11,200
AUGUST 3.—By the <i>City of Manchester</i> —Colombo:	
Henderson & Korn.	22,400
Arnold & Zeiss.	11,200
Aldens' Successors, Ltd.	7,600
J. T. Johnstone & Co.	99,040
Rubber Trading Co.	20,000
Hagemeyer Trading Co.	6,720
AUGUST 3.—By the <i>Sauronia</i> —London:	
Aldens' Successors, Ltd.	502,100
AUGUST 6.—By the <i>Andania</i> —Liverpool:	
Aldens' Successors, Ltd.	308,900
AUGUST 6.—By the <i>Burma Maru</i> —Yokohama:	
Henderson & Korn.	520,600
AUGUST 7.—By the <i>Beniew Maru</i> —East:	
Aldens' Successors, Ltd.	4,500
AUGUST 7.—By the <i>Bankoku Maru</i> —Singapore:	
General Rubber Co.	533,100
AUGUST 8.—By the <i>Talabot</i> —Colombo:	
Arnold & Zeiss.	19,000
AUGUST 9.—By the <i>Karimata</i> —Batavia:	
W. R. Grace & Co.	98,900
General Rubber Co.	347,500
J. T. Johnstone & Co.	43,089
Meyer & Brown.	26,600
Hagemeyer Trading Co.	52,640
AUGUST 10.—By the <i>Taurus</i> —East:	
Fred Stern & Co.	134,400
W. R. Grace & Co.	49,104
Henderson & Korn.	653,800
Aldens' Successors, Ltd.	54,000
J. T. Johnstone & Co.	499,665
Meyer & Brown.	100,900
Rubber Trading Co.	150,000
AUGUST 11.—By the <i>Tensha Maru</i> —Far East:	
Fred Stern & Co.	2,240
AUGUST 13.—By the <i>Baltic</i> —London:	
Aldens' Successors, Ltd.	63,800

POUNDS.

AUGUST 15.—By the <i>Louise Nielson</i> —Ceylon:	112,000
Fred Stern & Co.	106,577
J. T. Johnstone & Co.	44,800
Meyer & Brown.	17,920
Hagemeyer Trading Co.	8,960
AUGUST 17.—By the <i>Manila Maru</i> —Ceylon:	
Fred Stern & Co.	32,360
J. T. Johnstone & Co.	8,960
AUGUST 20.—By the <i>Wilis</i> —Batavia:	
J. T. Johnstone & Co.	35,840
AUGUST 20.—By the <i>Canada Maru</i> —Singapore:	
General Rubber Co.	286,700
AUGUST 20.—By the <i>Pannonia</i> —London:	
W. R. Grace & Co.	8,960
Aldens' Successors, Ltd.	520,000
AUGUST 21.—By the <i>Griqua</i> —Far East:	
Fred Stern & Co.	6,720
AUGUST 21.—By the <i>Empress of Asia</i> —Hong Kong:	
Arnold & Zeiss.	229,000
AUGUST 21.—By the <i>Lycaon</i> —London:	
Fred Stern & Co.	156,800
Rubber Trading Co.	135,000
AUGUST 21.—By the <i>Siberia Maru</i> —Singapore:	
General Rubber Co.	219,500
By the <i>Philadelphia</i> —London:	
Henderson & Korn.	475,200
Rubber Trading Co.	11,200
By the <i>Korea Maru</i> —Far East:	
Fred Stern & Co.	13,440
Rubber Trading Co.	18,000
By the <i>Wakasa Maru</i> —	
Henderson & Korn.	82,300
By the <i>Lancaster</i> —London:	
Rubber Trading Co.	33,600
By the <i>Manhattan</i> —London:	
Rubber Trading Co.	5,000
By the <i>Kamakata Maru</i> —	
Henderson & Korn.	62,600
By the <i>Milwaukee</i> —London:	
Meyer & Brown.	15,700
By the <i>Lake Michigan</i> —London:	
Meyer & Brown.	11,500
By the <i>Eurydome</i> —London:	
Meyer & Brown.	22,400
By the <i>Shidzuka</i> —Penang:	
Meyer & Brown.	2,200
By the <i>Mexico Maru</i> —Penang:	
Meyer & Brown.	4,500
By the <i>Princess Juliana</i> —Sourabaya:	
Meyer & Brown.	66,100
By the <i>Euryalus</i> —Far East:	
Fred Stern & Co.	212,800
By the <i>Tisonari</i> —Sourabaya:	
Meyer & Brown.	33,000
By the <i>Madison</i> —	
Hagemeyer Trading Co.	56,000
By the <i>Keweenaw</i> —Far East:	
Fred Stern & Co.	33,600
By the <i>Kirin Maru</i> —	
Hagemeyer Trading Co.	20,160
By the <i>Carnarvonshire</i> —	
Hagemeyer Trading Co.	8,960
By the <i>Saika Maru</i> —	
Hagemeyer Trading Co.	38,080
By the <i>Nippon</i> —Far East:	
Fred Stern & Co.	42,560
AUGUST 21.—By the <i>Yriqua</i> —	
W. R. Grace & Co.	38,110
Henderson & Korn.	26,000

AFRICANS.

JULY 16.—By the <i>New York</i> —England:	
Fred Stern & Co.	3,480
By the <i>Arwen</i> —Liverpool:	
Rubber Trading Co.	11,200

BALATA.

AUGUST 23.—By the <i>Prins der Nederlanden</i> —Paramaribo:	
Müller, Schall & Co.	28,598

GUAYULE.

	POUNDS.
JULY 29.—By the <i>El Alba</i> —Galveston:	
Continental Rubber Co. of New York.	58,000
AUGUST 6.—By the <i>El Mundo</i> —Galveston:	
Continental Rubber Co. of New York.	37,000
AUGUST 6.—By the <i>Conch</i> —Galveston:	
Continental Rubber Co. of New York.	51,000
AUGUST 8.—By the <i>El Siglo</i> —Galveston:	
Continental Rubber Co. of New York.	52,000
AUGUST 17.—By the <i>Alamo</i> —Galveston:	
Continental Rubber Co. of New York.	157,500

SCRAP.

AUGUST 9.—By the <i>Karimata</i> —Batavia:	
W. R. Grace & Co.	16,800
AUGUST 20.—By the <i>Turrialba</i> —San Jose:	
W. R. Grace & Co.	451
AUGUST 23.—By the <i>Wagland</i> —Para:	
W. R. Grace & Co.	682

CRUDE RUBBER ARRIVALS AT SEATTLE.

PLANTATIONS.

TO AKRON, OHIO.

JUNE 17.—By the <i>Louise Nielson</i> —Singapore: (Supplementary.)	POUNDS.
The Goodyear Tire & Rubber Co.	45,360
AUGUST 6.—By the <i>Burma Maru</i> —Yokohama:	
The Goodyear Tire & Rubber Co.	106,650
The B. F. Goodrich Co.	1,013,580
Firestone Tire & Rubber Co.	400,455
J. T. Johnstone & Co.	17,415 1,538,190
AUGUST 6.—By the <i>Bankoku Maru</i> —Singapore:	
The Goodyear Tire & Rubber Co.	608,175
Meyer & Brown.	33,615
J. T. Johnstone & Co.	76,680 718,470
AUGUST 7.—By the <i>Calcutta Maru</i> —Kobe:	
The Goodyear Tire & Rubber Co.	88,830
J. T. Johnstone & Co.	24,840 113,670
AUGUST 20.—By the <i>Canada Maru</i> —Yokohama:	
The B. F. Goodrich Co.	211,815
AUGUST 22.—By the <i>Tensha Maru</i> —Kobe:	
J. T. Johnstone & Co.	17,955
The Goodyear Tire & Rubber Co.	42,120 60,075
AUGUST 22.—By the <i>Ujina Maru</i> —Kobe:	
The Goodyear Tire & Rubber Co.	34,695

TO SEATTLE, WASH.

AUGUST 6.—By the <i>Burma Maru</i> —Yokohama:	
Mitsui & Co., Limited.	42,120
Henderson & Korn.	56,700
L. Littlejohn & Co.	105,030
Robinson & Co.	8,370
The Goodyear Tire & Rubber Co.	32,400 244,620
AUGUST 6.—By the <i>Bankoku Maru</i> —Singapore:	
W. R. Grace & Co.	7,020
Aldens' Successors, Ltd.	39,420
Henderson & Korn.	32,535
East Asiatic Co.	1,890
L. Littlejohn & Co.	148,500
The B. F. Goodrich Co.	666,765
Meyer & Brown.	3,240
The Goodyear Tire & Rubber Co.	6,345
Robinson & Co.	40,500
Arthur Meyer & Co.	7,290
Raw Products Co.	22,680
Rubber Trading Co.	3,645 979,830

POUNDS	
August 7.—By the <i>Calcutta Maru</i> =Kobe:	
Arthur Meyer & Co.	1,620
Robinson & Co.	38,475
W. R. Grace & Co.	15,795
Mitsui & Co., Limited.	56,835 112,725

August 6.—By the <i>Bankoku Maru</i> =Singapore:	
L. Littlejohn & Co. (Gutta percha)	21,600
L. Littlejohn & Co. (Gutta jelutong)	220,590 242,190

TO NEW YORK.

August 6.—By the <i>Azumasen Maru</i> =Kobe:	
Mitsui & Co., Limited.	65,610

August 6.—By the <i>Burma Maru</i> =Yokohama:	
Henderson & Korn.	290,655
Rubber Trading Co.	27,540
William H. Stiles.	54,810
L. Littlejohn & Co.	73,440
Edward Maurer & Co.	90,450
Robinson & Co.	74,655
Arthur Meyer & Co.	25,245
Hadden & Co.	94,905
Robert Badenhop Co.	131,760
Charles T. Wilson Co., Inc.	119,610 983,070

August 6.—By the <i>Bankoku Maru</i> =Singapore:	
United States Rubber Co.	292,950
Robinson & Co.	80,190
L. Littlejohn & Co.	71,280
Aldens' Successors, Ltd.	52,785
J. T. Johnstone & Co.	52,785
Charles T. Wilson Co., Inc.	17,820
Arthur Meyer & Co.	22,275
Rubber Trading Co.	15,255
Fred Stern & Co.	18,090 623,430

August 6.—By the <i>Calcutta Maru</i> =Kobe:	
Aldens' Successors, Ltd.	10,800
Arthur Meyer & Co.	10,260
L. Littlejohn & Co.	34,155
Robinson & Co.	8,775
W. R. Grace & Co.	25,245
Charles T. Wilson Co., Inc.	17,550
E. G. Curry.	56,970
William H. Stiles.	45,360
Edward Maurer & Co.	43,335
Rubber Trading Co.	18,225 270,675

August 20.—By the <i>Canada Maru</i> =Yokohama:	
The United States Rubber Co.	248,000

August 22.—By the <i>Tenshyo Maru</i> =Kobe:	
W. R. Grace & Co.	20,925
Various	252,450 273,375

August 22.—By the <i>Ujima Maru</i> =Kobe:	
W. R. Grace & Co.	17,685
L. Littlejohn & Co.	8,100 25,785

TO VANCOUVER.

August 6.—By the <i>Bankoku Maru</i> =Singapore:	
L. Littlejohn & Co.	11,475
The Goodyear Tire & Rubber Co.	53,190
The Canadian Pacific Ry. Co.	1,722,280
United States Rubber Co.	299,565 2,136,510

TO WATERTOWN, MASS.

August 6.—By the <i>Burma Maru</i> =Yokohama:	
Hood Rubber Co.	102,195

TO SAN FRANCISCO, CAL.

August 6.—By the <i>Calcutta Maru</i> =Kobe:	
L. Littlejohn & Co.	6,480

PONTIANAK.

TO AKRON, OHIO.

August 6.—By the <i>Bankoku Maru</i> =Singapore:	
The United Malaysian Rubber Co. (Gutta untreated)	67,500

TO NEW YORK.

August 6.—By the <i>Bankoku Maru</i> =Singapore:	
The United Malaysian Rubber Co. (Gutta untreated)	258,525

August 17.—By the <i>Inaba Maru</i> =Yokohama:	
Aldens' Successors, Ltd. (Gutta jelutong)	810

CRUDE RUBBER ARRIVALS AT SAN FRANCISCO.

PLANTATIONS.

TO SAN FRANCISCO.

JULY 27.—By the <i>Princess Juliana</i> =Sourabaya:	
H. B. M. Consul General.	141,345
Edward Maurer & Co.	236,115
Arnold & Zeiss.	32,670
L. Littlejohn & Co.	34,560
National City Bank of N. Y.	59,130
The Goodyear Tire & Rubber Co.	397,305
Firestone Tire & Rubber Co.	438,050
J. T. Johnstone & Co.	19,710 1,356,885

POUNDS	
August 3.—By the <i>Glenogle Persia</i> =Singapore:	
Bowers Rubber Works.	10,260
Henderson & Korn.	152,010
The B. F. Goodrich Co.	106,245 268,515

August 5.—By the <i>Willis</i> =Batavia:	
Arnold & Zeiss.	104,220
L. Littlejohn & Co.	3,915
W. Peabody.	13,770
Edward Maurer & Co.	49,545
MacDonald Sons.	20,250
Various	99,900
Firestone Tire & Rubber Co.	273,240
The Goodyear Tire & Rubber Co.	215,865
J. T. Johnstone & Co.	17,280
The B. F. Goodrich Co.	231,795 1,029,780

August 14.—By the <i>Korea Maru</i> =Singapore:	
The Goodyear Tire & Rubber Co.	39,420
J. T. Johnstone & Co.	123,390
The B. F. Goodrich Co.	190,890
Henderson & Korn.	350,055
William H. Stiles & Co.	18,225
E. G. Curry.	6,885
Edward Maurer & Co.	4,590
L. Littlejohn & Co.	2,295
Rubber Trading Co.	4,590
Arthur Meyer & Co.	10,125
Robinson & Co.	27,810
United States Rubber Co.	11,610 789,885

August 15.—By the <i>Colombia</i> =Colombo:	
S. L. Jones & Co.	10,395
The Goodyear Tire & Rubber Co.	10,665
Meyer & Brown.	29,970
J. T. Johnstone & Co.	12,690
Rubber Trading Co.	9,450
Edward Maurer & Co.	22,680
William H. Stiles & Co.	20,520 116,370

August 15.—By the <i>Bintang</i> =Sourabaya:	
Various	409,050
Edgar & Co.	9,045
L. Littlejohn & Co.	87,885
J. D. Spreckles Co. (Samples).	135
Edward Maurer & Co.	8,640
Raw Products Co.	1,890
The Goodyear Tire & Rubber Co.	43,875 560,520

August 18.—By the <i>Rembrandt</i> =Sourabaya:	
L. Littlejohn & Co.	223,695
Edward Maurer & Co.	141,480
Savage Tire Co.	6,480
The Goodyear Tire & Rubber Co.	52,110
The B. F. Goodrich Co.	160,920
Firestone Tire & Rubber Co.	69,795
Winters Sons & Co.	27,945
Manhattan Rubber Co.	42,525
T. Guidanus.	43,200
Arnold & Zeiss.	86,670
Various	46,035 900,855

PONTIANAK.

August 5.—By the <i>Willis</i> =Batavia:	
L. Littlejohn & Co.	27,000
First National Bank of San Francisco	10,800 37,800

August 15.—By the <i>Colombia</i> =Colombo:	
Busk & Daniels (Gutta percha)	4,185

STATISTICS OF CRUDE AND MANUFACTURED RUBBER AT THE PORT OF NEW YORK.

IMPORTS.

UNMANUFACTURED—free:		June, 1917.	
		POUNDS	VALUE.
India rubber:			
From—			
Malta	4,836		\$1,907
Portugal	401,320		121,344
England	10,719,733		7,733,062
British Honduras	316		95
Costa Rica	24,312		14,312
Guatemala	12,508		3,492
Honduras	7,895		5,180
Nicaragua	55,035		26,456
Panama	26,042		8,638
Mexico	124,561		53,330
Other British West Indies.	7,178		5,968
Cuba	3,314		1,678
Brazil	9,410,413		3,606,244
Colombia	87,077		37,325
Ecuador	27,223		12,622
Dutch Guiana	1,275		1,264
Peru	47,704		25,723
Venezuela	22,100		12,810
British India	13,320		7,507
Straits Settlements	4,342,407		2,428,706
Other British East Indies.	975,400		607,329
Dutch East Indies.	5,979,721		3,620,336
Totals	32,297,664		\$18,337,475

UNMANUFACTURED—free:		June, 1917.	
		POUNDS	VALUE
Gutta Percha—free:			
Straits Settlements		2,010	\$2,880
Totals		2,010	\$2,880

Gutta jelutong—dutiable:			
Dutch East Indies.	2,491,417		\$98,808
Straits Settlements	1,473,314		72,912
Totals	3,964,731		\$171,720

Balata—free:			
Canada	100,717		\$47,578
Trinidad	50		13
Other British West Indies.	12,981		10,126
Colombia	70,116		30,098
Dutch Guiana	95,740		70,347
Venezuela	81,767		35,633
Totals	361,371		\$193,795

Rubber Scrap—free:			
France	371,501		\$21,971
Italy	70,400		15,502
England	1,256,136		96,554
Panama	6,241		351
Jamaica	940		75
Cuba	72,728		5,137
San Domingo	233		12
Brazil	50,706		6,980
Venezuela	9,815		303
Australia	64,797		3,018
Totals	1,903,497		\$149,903

Guayule—free:			
Venezuela	8,984		\$3,985
Totals	8,984		\$3,985

Totals Unmanufactured.		38,538,257	\$18,859,758
Rubber substitute—dutiable:			
England			\$4,740
Colombia			901
Totals			\$5,641

MANUFACTURED—			
India Rubber—dutiable:			
France			\$25
Switzerland			242
England			32,051
Scotland			1,582
Canada			4,288
Straits Settlements			2,555
Japan			3,208
Totals			\$43,951

Gutta Percha—dutiable:			
England			\$1,389
Scotland			1,123
Total			\$2,512

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—		June, 1917.	
		POUNDS	VALUE.
Automobile tires:			
France			\$74,992
Italy			57,317
England			318,865
Cuba			81,066
Argentina			88,994
Brazil			95,357
Chile			39,273
Uruguay			24,661
New Zealand			25,237
Other Countries			154,040
Total			\$959,802

All other tires.			\$124,228
Belting			280,264
Rubber boots—pairs	2,418		9,702
Rubber shoes—pairs	90,478		6,548
Scrap rubber	146,007		20,007
Reclaimed rubber	8,450		1,583
Other rubber manufactures.			456,562
Total manufactured			\$1,858,696

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—		June, 1917.	
		POUNDS	VALUE.
India rubber			
		34	\$25
Totals		34	\$25

RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

May, 1917.		
UNMANUFACTURED—free:	Pounds.	Value.
India rubber:		
From—		
France	11,161	\$7,813
Portugal	1,074,426	397,724
United Kingdom	11,889,420	8,456,517
Central American States and British Honduras..	89,759	39,552
Mexico	71,933	24,941
Brazil	5,175,512	2,136,604
Other South America...	498,265	220,635
East Indies	17,930,776	11,320,585
Other countries	1,275,237	771,347
Totals	38,016,489	\$23,375,718
Balata	176,609	\$85,574
Guayule gum	489,253	137,450
Gutta jelutong.....dutyable	2,320,221	91,796
Gutta percha	17,902	6,634
Totals	41,020,474	\$23,697,172
Rubber scrap	1,571,153	114,415
Totals, unmanufactured	42,591,627	\$23,811,587
Chicle	439,927	\$228,787
MANUFACTURED—dutyable:		
Gutta percha		\$9,477
India rubber		72,998
Totals, manufactured..		\$82,475
Substitutes—elasticon, etc..		\$2,807

EXPORTS OF DOMESTIC MERCHANDISE.

May, 1917.		
MANUFACTURED—	Pounds.	Value.
Automobile tires:		
To—		
France		\$56,418
England		89,630
Canada		275,861
Mexico		36,580
Cuba		136,182
Australia		30,569
New Zealand		62,091
Philippine Islands		44,431
Other countries		559,486
Total		\$1,271,248
All other tires		128,928
Belting, hose and packing.		260,496
Rubber boots		69,266
Rubber shoes		241,677
Scrap and old rubber..		600,193
Reclaimed rubber		334,824
Other rubber manufactures		746,897
Total, manufactured..		\$2,729,075
Fountain pens.....number	17,284	12,806

EXPORTS OF FOREIGN MERCHANDISE.

May, 1917.		
UNMANUFACTURED—	Pounds.	Value.
Balata	49,222	\$28,945
Guayule gum		
Gutta jelutong	432	302
Gutta percha	573,162	399,381
Rubber scrap and refuse..		
Totals, unmanufactured	582,816	\$428,628
Chicle	6,673	\$2,927
MANUFACTURED—		
Gutta percha		\$120
India rubber		790
Total		\$910

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

May, 1917.		
MANUFACTURED—	Pounds.	Value.
To—		
Alaska:		
Belting, hose and packing		\$25,169
Boots and shoes.....pairs	14,975	42,772
Other rubber goods.....		5,628
Total		\$73,569

May, 1917.		
MANUFACTURED—	Pounds.	Value.
To—		
Hawaii:		
Belting, hose and packing		\$7,861
Automobile tires		79,066
Other tires		3,781
Other rubber goods.....		33,129
Total		\$123,837
To—		
Philippine Islands:		
Belting, hose and packing		\$6,770
Boots and shoes.....pairs	12,627	7,817
Tires		49,678
Other rubber goods.....		11,845
Total		\$76,110
To—		
Porto Rico:		
Belting, hose and packing		\$5,240
Automobile tires		55,433
Other tires		246
Other rubber goods.....		6,844
Total		\$67,763

UNITED KINGDOM RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

IMPORTS.

June, 1917.		
UNMANUFACTURED—	Pounds.	£
Crude rubber	17,196,300	2,483,801
Waste and reclaimed rubber	150,800	3,169
Gutta percha	449,680	67,786
Totals	17,796,780	2,554,756
MANUFACTURED—	Pounds.	£
Apparel, waterproofed		623
Boots and shoes.....doz. pairs	14,933	21,950
Insulated wire		1,999
Automobile tires and tubes..		154,449
Motorcycle tires and tubes..		782
Cycle tires and tubes.....		1,988
Tires not specified.....		1,083
Totals		182,874

EXPORTS.

June, 1917.		
UNMANUFACTURED—	Pounds.	£
Waste and reclaimed rubber	1,567,000	30,811
MANUFACTURED—	Pounds.	£
Apparel, waterproofed		55,325
Boots and shoes.....doz. pairs	8,319	9,540
Insulated wire		34,968
Automobile tires and tubes..		145,952
Motorcycle tires and tubes..		9,836
Cycle tires and tubes.....		46,073
Tires not specified.....		9,887
Manufactures not specified..		147,661
Total		459,242

EXPORTS—FOREIGN AND COLONIAL.

June, 1917.		
UNMANUFACTURED—	Pounds.	£
Crude rubber	10,990,300	1,709,018
Waste and reclaimed rubber		
Gutta percha	47,600	3,269
Totals	11,037,900	1,712,287
MANUFACTURED—	Pounds.	£
Apparel, waterproofed		23
Boots and shoes.....doz. pairs	1,944	2,676
Insulated wire		6,618
Automobile tires and tubes..		52,978
Motorcycle tires and tubes..		4,185
Cycle tires and tubes.....		419
Tires not specified.....		25
Total		66,924

LONDON AND LIVERPOOL RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

IMPORTS.

June, 1917.		
UNMANUFACTURED—	Pounds.	£
Crude rubber:		
At—		
London	13,662,600	2,039,755
Liverpool	2,891,100	375,017
Totals	16,553,700	2,414,772

June, 1917.		
UNMANUFACTURED—	Pounds.	£
Waste and reclaimed rubber:		
At—		
London	27,500	1,029
Liverpool	82,200	1,113
Totals	109,700	2,142

EXPORTS.

Waste and reclaimed rubber manufactures of the United Kingdom:		
From—		
London	880,600	14,348
Liverpool	376,200	11,259
Totals	1,256,800	25,607

REEXPORTS.

Crude rubber:		
From—		
London	9,126,400	1,465,209
Liverpool	1,519,300	202,511
Totals	10,645,700	1,667,720

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

The import and export figures by countries usually published in this table are withheld by the Canadian Government.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

May, 1917.		
UNMANUFACTURED—free:	Pounds.	Value.
Rubber and gutta percha, crude caoutchouc or india rubber	1,904,031	\$1,263,581
Rubber, recovered	613,455	84,728
Hard rubber, in sheets and rods	3,103	2,496
Rubber substitute	42,067	3,814
Rubber, powdered, and rubber or gutta percha waste.	210,938	10,402
Rubber thread, not covered.	4,620	6,622
Chicle	182,294	70,161
General Tariff.		Preferential Tariff.
MANUFACTURED—dutyable:		
Boots and shoes	\$13,088	\$5,223
Belting	10,767	7,449
Waterproof clothing	23,516	47,957
Hose, lined with rubber..	12,501	
Mats and matting.....	573	
Packing	10,081	339
Tires of rubber for all vehicles	192,466	2,654
Rubber cement and all manufactures of india rubber and gutta percha—N. O. P.	91,079	26,876
Hard rubber, unfinished, in tubes for fountain pens..	875	
Webbing—over one inch wide	19,496	699

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

May, 1917.		
MANUFACTURED—	Produce of Canada.	Reexports of Foreign Goods.
Belting	\$3,277	
Hose	15,865	
Boots and shoes	73,824	48
Waterproof clothing		82
Tires	143,669	142
Waste	32,219	
All other, N. O. P.	3,780	598,223
Chicle, crude	215,884	

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

Three Months Ending March, 1917.		
UNMANUFACTURED—	Pounds.	Libre.
India rubber and gutta percha—raw and reclaimed:		
From—		
Great Britain	362,780	
Straits Settlements	12,320	
African French colony..	12,540	
Belgian Congo	119,900	
Brazil	1,294,480	
Other countries	705,100	
Totals	2,507,120	9,116,800

Three Months Ending March, 1917.			Three Months Ending March, 1917.			Three Months Ending March, 1917.		
UNMANUFACTURED—		POUNDS.	MANUFACTURED—		POUNDS.	MANUFACTURED—		POUNDS.
Rubber scrap	187,660	76,770	Tires and tubes:			Elastic webbing:		
MANUFACTURED—			From—			To—		
India rubber and gutta percha			France	85,580		France	1,320	
—threads:			Great Britain	104,500		Greece	3,740	
From—			Other countries	12,980		Spain	4,800	
Great Britain	6,820		Totals	203,060	1,846,090	Switzerland	23,760	
United States	7,040		Other rubber manufactures:			Egypt	4,620	
Other countries	880		From—			Argentina	17,600	
Totals	14,740	134,000	France	15,180		Brazil	38,720	
India rubber and gutta percha			Great Britain	62,260		Chile	4,620	
—sheets:			United States	19,800		Cuba	6,600	
Cut sheets	220	1,700	Other countries	440		Other countries	8,360	
Hard rubber	4,840	17,600	Totals	97,680	355,200	Totals	114,180	778,500
India rubber and gutta percha			Total imports	12,042,170		Clothing and articles for		
—tubes:			EXPORTS OF CRUDE AND MANUFACTURED			travel	4,180	43,700
From cut sheet	220	1,800	RUBBER.			Articles not specified:		
Elastic fabrics	6,600	18,000	Three Months Ending			From cut sheets:		
Other forms	1,320	4,200	March, 1917.			To—		
Belting	28,380	90,300	UNMANUFACTURED—			Great Britain	660	
Rubber coated fabrics, <i>pieces</i>	11,660	74,200	POUNDS.			Argentina	3,960	
Other fabrics:			LIRE.			Uruguay	1,760	
From—			India rubber and gutta percha			Other countries	220	
Great Britain	5,060		—raw and reclaimed:			Totals	6,600	60,000
Other countries	2,420		To—			Fabrics	9,020	36,900
Totals	7,480	34,000	Spain			Tires and tubes:		
Boots and shoes— <i>pairs</i> :			United States			To—		
From—			Totals			France	255,640	
France	5,637		MANUFACTURED—			Great Britain	773,520	
Great Britain	1,663		India rubber and gutta percha			Switzerland	1,100	
Totals	7,300	36,500	—threads:			India and Ceylon	190,080	
Elastic Webbing:			To—			Australia	440	
From—			France			Argentina	165,880	
France	10,340		Great Britain			Brazil	77,880	
Great Britain	1,980		Spain			Other countries	337,040	
Other countries	2,200		Switzerland			Totals	1,801,580	16,378,000
Totals	14,520	99,000	Argentina			Other rubber manufactures:		
Articles not specified:			Other countries			To—		
From cut sheets	6,160	56,000	Totals			France	15,620	
Fabrics:			India rubber and gutta percha			Great Britain	15,620	
From—			—sheets:			Spain	2,420	
France	3,300		Cut sheets			Switzerland	11,000	
Great Britain	10,780		Elastic fabric			Egypt	660	
Other countries	5,500		2,860			Argentina	29,700	
Totals	19,580	80,100	Insulated wire			Brazil	10,560	
			220			Uruguay	3,740	
			Hard rubber			Other countries	7,260	
			8,360			Totals	96,580	351,200
			India rubber and gutta percha			Total exports	18,677,800	
			—tubes:					
			Elastic fabric					
			9,460					
			Other forms					
			19,580					
			Belting					
			440					
			Rubber coated fabrics, <i>pieces</i>					
			18,700					

UNITED STATES TRADE WITH SOUTH AMERICAN STATES.

IMPORTS.	Pounds.				Value.			
	1916.	1915.	1914.	1913.	1916.	1915.	1914.	1913.
Crude india rubber:								
From—								
Brazil	49,282,000	51,473,000	44,686,000	40,452,000	\$24,589,000	\$21,422,000	\$17,822,000	\$19,867,000
Colombia	750,000	426,000	382,000	636,000	327,000	182,000	176,000	435,000
Ecuador	661,000	366,000	215,000	890,000	275,000	137,000	76,000	568,000
Panama	136,002	89,857			45,986	23,373		
Peru	3,476,000	3,154,000	1,017,000	352,000	1,703,000	1,334,000	427,000	303,000
Uruguay	78,743	100,344			66,200	73,425		
Venezuela	640,000	893,000	499,000	588,000	300,000	203,000	128,000	324,000
Totals	55,023,745	56,502,201	46,799,000	42,918,000	\$27,306,186	\$23,374,798	\$18,629,000	\$21,497,000
Balata:								
From—								
Panama	701,320	673,933			\$268,634	\$201,687		
Venezuela	640,000	893,000	499,000	588,000	235,000	280,000	\$212,000	\$280,000
Totals	1,341,320	1,566,933	499,000	588,000	\$503,634	\$481,687	\$212,000	\$280,000
Chicle:								
From—								
Venezuela	931,000	952,000	132,000	66,000	\$213,000	\$229,000	\$29,000	\$13,000
EXPORTS.								
Automobiles; number:								
To—								
Argentina	4,399	626	940	1,062	\$2,065,000	\$294,000	\$964,000	\$1,182,000
Venezuela	518	227	126	104	314,000	143,000	102,000	109,000
Totals	4,917	853	1,066	1,166	\$2,379,000	\$437,000	\$1,066,000	\$1,291,000
Insulated wire and cables:								
To—								
Brazil					\$286,000	\$143,000	\$323,000	
Rubber Belting:								
To—								
Chile					\$176,000	\$107,000	\$71,000	\$58,000

THE MARKET FOR RUBBER SCRAP.

Copyright 1917.

NEW YORK.

QUIET and dull expresses the situation that has prevailed in the rubber scrap market for the month just passed. August is usually given to shut-downs for repairs, new installations and stock taking. However, there was quiet trading, traceable to war orders that are keeping some of the rubber mills busy at this time. While the volume of business transacted has not been large in the aggregate, there was sufficient interest to support the market, and prices, with few exceptions, are the same as quoted a month ago. With the passing of the vacation period and the setting in of cooler weather, a more active interest in rubber scrap will doubtless be felt, as the mills are looking forward to a large fall business. While the low price of crude rubber may have had a quieting effect on the market, the fact that reclaim is a different material and an important factor in compounding and will create a demand of its own.

BOOTS AND SHOES. The trading in this material has been spotty and confined to carload lots on contract orders. New business has been hampered by uncertainty as to values, since transactions actually consummated were insufficient to establish prices. Boots and shoes were nominally held around 9½ to 9½ cents delivered to the mills, and arctics have shown but little improvement since a month ago. Trimmed arctics were nominally quoted around 7½ cents, and untrimmed at 6½ cents. The undertone is firm and holders are quietly waiting the resumption of fall business, confident in higher prices.

TIRES. The interest in tires has been almost negligible, with white G. & G. tires the duller of all. The difference between this grade and mixed auto tires is so small as not to warrant the expense of sorting G. & G. tires; in fact, some holders have for some time classified both grades as standard mixed auto tires. Prices have shown very little change, standard white G. & G. tires being quoted at 7¼ to 7¼ cents, and standard mixed auto tires at 6¼ to 7 cents. Solid tires have been fairly active, the principal interest being shown in the clean material. The standard grade was 7¼ cents, and clean truck tires were 7½ cents.

INNER TUBES. There appears to be an unwillingness on the part of small dealers to sell No. 1 tubes at present prices, with the patches removed in accordance with the new classification. The demand has been quiet for all grades of tubes, and very little movement has been noticed in this material during the month. Prices are largely nominal, with No. 1 tubes quoted 25½ cents, and both No. 2 and red tubes at 13½ cents.

MECHANICALS. Garden hose has had a fairly good call in some quarters, but the other grades have been very dull and uninteresting. Prices have remained practically unchanged from the quotations published a month ago.

UNITED STATES STATISTICS. For the fiscal year ended July 30, 1917, the imports of rubber scrap were 20,517,328 pounds, value \$1,569,448, compared to 16,371,573 pounds, value \$1,271,903, in 1916. Exports for the fiscal year ended June 30, 1917, were 3,819,627 pounds, value \$420,740, compared to 3,904,715 pounds, value \$400,148, in 1916. During the fiscal year of 1917 the exports of reclaimed rubber were 4,938,991 pounds, value \$814,199, compared to 6,406,946 pounds, value \$871,262, in 1916.

LONDON AND LIVERPOOL STATISTICS. The imports of waste and reclaimed rubber for June were 109,700 pounds, value £2,142, compared with 143,600 pounds for May, value £3,103. Exports of waste and reclaimed rubber manufactures of the United Kingdom for June were 1,256,800 pounds, value £25,607, compared to 904,100 pounds, value £14,947, for May.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

AUGUST 27, 1917.

Prices subject to change without notice.

	PER POUND.
Boots and shoes.....	\$0.09½ @
Trimmed arctics .....	.07½ @
Untrimmed arctics .....	.06½ @
White tires, Goodrich and Goodyear.....	.07½ @ .07¼
Auto tires, standard white.....	.07½ @
standard mixed .....	.06½ @ .07
stripped, unguaranteed .....	.05½ @ .05¼
Auto peelings, No. 1.....	.10 @
No. 2.....	.09 @
Inner tubes, No. 1.....	*.25½ @
free from patches and valve seats.....	*.25½ @
No. 2.....	*.13½ @
red	*.13½ @
Irony tires .....	.02½ @
Bicycle tires .....	.05½ @
Solid tires .....	.07½ @
Clean truck tires .....	.07½ @
White scrap, No. 1.....	*.14 @
No. 2.....	*.10 @
Red scrap, No. 1.....	*.10 @
No. 2.....	*.07½ @
Mixed black scrap, No. 1.....	.05½ @
No. 2 .....	.04½ @ .04¼
Rubber car springs.....	.03½ @
Horse shoe pads.....	.03 @
Matting and packings.....	.01½ @
Garden hose .....	.02¼ @
Air brake hose.....	.05¼ @
Cotton fire hose.....	.02¼ @
Large hose .....	.02½ @
Hard rubber scrap, No. 1, bright fracture.....	.27 @ .28
Battery jars (black compound).....	.03½ @ .03½
Insulated wire stripping, free from fibre.....	.04¼ @
Rubber heels .....	.04¼ @

* Nominal.

THE MARKET FOR COTTON AND OTHER FABRICS.

Copyright, 1917.

NEW YORK.

EARLY in August the tendency of the American cotton market was upward, due to the government's report indicating that the new crop conditions had not improved, as was generally expected. There was a pronounced sentiment, however, that the prospects were really better than indicated by the last official figures and that the new crop has really improved. The situation failed to stimulate buying to any great extent and prices held firm. On August 1 middling spot cotton was selling for 25.26 cents, with December contracts at 24.49 cents. As the month progressed the market became nervous and the sentiment bearish, but selling was restricted by the uncertain crop situation. During the last week of the month the market eased off as the result of a more optimistic view of the new crop prospects, and prices declined. On August 28 middling spot cotton was quoted 23.10 cents in a quiet market.

The new crop picking is well advanced and prospects of early marketing are good and new cotton offers are coming in from various sections of the cotton belt.

The total new crop is estimated around 14,000,000 bales, compared to last year's world's consumption of 14,054,000 bales. There are many uncertainties, however, that may reduce the final outcome, such as frost and storms; and, moreover, the crop is capable of further improvement, so that the ultimate yield is still a speculative matter.

EGYPTIAN COTTON. The situation appears to be unchanged and while supplies are confidently expected the actual relief is not yet in sight. The Alexandria Cotton Co., Limited, reports the following new Egyptian cotton crop conditions: "Temperature has been constantly below normal and these conditions are unfavorable to a quick maturity. Last year we had at the same period continuous excessive heat which did much harm to the formation of the first picking bolls; this year the excessive cool-

ness will delay the formation of the first picking bolls and as a consequence they will suffer more from the pink boll worm attacks. In the northern districts considerable progress is to be noticed in the growth of the crop, but the original delay has not yet been recovered. The cotton leaf worm attack is now dying out everywhere. In general, the damage is less than last year. With regard to the pink boll worm, a sample of 100 bolls in Behera showed on examination, 16 bolls attacked by worms, and another sample from Menufia gave 25 per cent."

SEA ISLAND COTTON. The southern markets will open early in September and active demand is expected for all grades of this staple at high prices. However, the U. S. Census Bureau reports 41,149 bales of Sea Island cotton at the mills and 23,405 bales in warehouse, making a total of 64,554 bales unconsumed on June 30, that may prevent early buying at high prices. Increase in acreage is reported in the entire belt and crop conditions as a whole are promising despite the apprehension felt in some districts where the boll-weevil has already appeared. Should favorable weather conditions prevail and the pests be controlled, a final crop of 125,000 bales may be expected.

AIRPLANE AND GAS MASK FABRICS. The demand has been unusually active and prices unchanged, with the exception of Wamsutta No. 4, 38½ inch, that is now 42½ cents. A special grade of this fabric used for gas masks has been very active and is quoted at 44 cents.

MECHANICAL DUCKS. Hose and belting ducks continue to be insistently called for from both civilian and government sources. Prices are firm and unchanged, with a tendency to advance.

RAINCOAT FABRICS. Some large sales of 64 by 60 inch, olive-drab bombazines for government contracts have been reported. Manufacturers are confidently hoping to secure additional contracts for supplying the new slickers prescribed by the government. The demand has been good for small plaids printed in sport colors, as outside fabrics for women's coats and children's capes. These are surface prints on a 64 by 60 inch cloth and have the appearance of a high-priced woven fabric.

SHEETINGS, OSNABURGS, DRILLS. Government orders are responsible for the firm condition of these fabrics. Sheetings and Osnaburgs have been very active and prices for certain grades have advanced. Carriage cloth duck is very scarce and prices are firmly quoted, showing an upward revision since our last report. Drills have had an active demand, with the result that stocks are very low and prices are firm and unchanged.

TIRE FABRICS. The tire fabric market is still harassed by the uncertainty attending the new crops of Egyptian and Sea Island cotton. Standard 17¼-ounce Egyptian and Sea Island building fabrics have been greatly restricted by the prevailing conditions and are not quoted by some manufacturers. Present quotations are considered to be largely nominal. Standard 17¼-ounce peeler building fabrics have been in active demand, with an advancing price tendency.

NEW YORK QUOTATIONS.

AUGUST 27, 1917.

Prices subject to change without notice.

Airplane and Balloon Fabrics:

Wamsutta, S. A. I. L. No. 1, 40-inch.....yard \$0.57 ¼ @
No. 4, 38½-inch.....42 ¼ @
Gas mask fabric......44 @

Wool Stockinettes—52-inch:

A—14-ounce.....yard 1.75 @
B—14-ounce.....2.25 @
C—14-ounce.....2.50 @

Cotton Stockinettes—52-inch:

D—14-ounce.....yard .85 @ .90
E—11¼-ounce......60 @ .65
F—14-ounce......85 @ .90
G—8-ounce......75 @ .80
H—11-ounce......70 @ .85
I—9-ounce......60 @ .65

Colors—white, black, blue, brown.

Knitabac Stockinette.....pound 1.60 @ 1.65

Tire Fabrics:

17¼-ounce Sea Island, combed.....square yard *1.50 @ 1.60
17¼-ounce Egyptian, combed.....1.35 @ 1.40

17¼-ounce Egyptian, carded.....1.32 @ 1.35
17¼-ounce Peelers, combed.....1.05 @
17¼-ounce Peelers, carded......82 @ 1.00

Sheeting:

40-inch 2.35-yard.....yard .19 @
40-inch 2.50-yard......18 @
40-inch 2.70-yard......17 ¼ @
40-inch 2.85-yard......16 ¼ @
40-inch 3.15-yard......16 @

Osnaburgs:

40-inch 2.25-yard.....yard .19 ¼ @
40-inch 2.48-yard......17 ¼ @
37½-in. 2.42-yard......17 ¼ @

Mechanical Ducks:

Hose.....pound .53 @
Belting......52 @ .53

Carriage Cloth Duck:

38-inch 2.00-yard enameling duck.....yard .26 ¼ @
38-inch 1.74-yard......30 @
72-inch 16.66-ounce......55 @
72-inch 17.21-ounce......60 @

Drills:

38-inch 2.00-yard.....yard .25 @
40-inch 2.47-yard......20 @
52-inch 1.90-yard......26 ¼ @
52-inch 1.95-yard......26 @
60-inch 1.52-yard......33 @

Imported Woolen Fabrics Specially Prepared for Rubberizing—Plain and Fancies:

63-in., 3¼ to 7¼ ounces.....yard .60 @ 1.75
36-inch, 2¼ to 5 ounces......40 @ .95

Imported Plaid Lining (Union and Cotton):

63-inch, 2 to 4 ounces.....yard .50 @ 1.00
36-inch, 2 to 4 ounces......42 ½ @ .75

*Nominal prices.

TIRE FABRICS

JENCKES SPINNING COMPANY

PAWTUCKET
RHODE ISLAND

Domestic Worsted Fabrics:		
36-inch, 4½ to 8 ounces.....	yard	.45 @ .80
Domestic Woven Plain Linings (Cotton):		
36-inch, 3¼ to 5 ounces.....	yard	.12½ @ .27½
Raincoat Cloth (Cotton):		
Bombazine 64 x 60 water repellent.....	yard	.14½ @
60 x 48 not water repellent.....		.11½ @
Twills 64 x 72.....		.16½ @ .17
64 x 102.....		.22½ @ .25
Tweed.....		.25 @ .30
Tweed, printed.....		.10 @ .15
Plaids 60 x 48.....		.12 @ .14
56 x 44.....		.13 @
Surface prints 60 x 48.....		.14½ @
64 x 60.....		.19 @ .23½
Repp.....		
Burlaps:		
32-7½-ounce.....	100 yards	9.10 @
40-7½-ounce.....		10.30 @
40-8-ounce.....		10.45 @
40-10-ounce.....		14.00 @
40-10½-ounce.....		13.75 @
45-7½-ounce.....		12.50 @
45-8-ounce.....		*12.40 @ 12.60
45-9½-ounce.....		*15.15 @ 15.25
48-10-ounce.....		18.00 @

* Nominal prices.

EGYPTIAN COTTON MOVEMENT.

FROM AUGUST 1, 1916, TO JULY 11, 1917.

To—	1916-17.	1915-16.	1914-15.
Liverpool.....	bales 214,726	213,585	207,234
Manchester.....	131,609	137,299	149,429
Total shipments to Great Britain.....	346,335	350,884	356,663
To—			
France.....	27,735 }	38,056	59,919
Spain.....	10,321 }		50,842
Italy.....	31,603 }	51,491	53,800
Switzerland.....	19,888 }		169,112
Russia.....	31,731 }	42,360	40,575
Greece.....	65 }	785	2,392
Total shipments to continent.....	121,343	156,864	262,921
To—			
United States.....	120,731	193,788	162,917
India.....	100 }	11,255	25,265
Japan.....	11,155 }		16,556
Total shipments to all parts.....	599,664	726,801	799,057
Total crop (interior g. weight), cantars*.....		4,726,518	6,473,726

* Cantar equals 98 pounds.

(Compiled by Davis, Benachi & Co., Liverpool.)

SEA ISLAND CROP 1916-1917.

	Receipts 1916-1917.	Receipts 1915-1916.
Stock on hand, August 1, 1916—Savannah, 2,401; Charleston, 107.....		2,382
Received at Savannah (net).....	47,499	38,216
Received at Charleston.....	3,495	6,211
Received at Jacksonville.....	43,080	30,367
Received at Norfolk.....	1,914	...
Received at interior points and shipped direct to southern mills.....	17,121	11,018
Total Available Supply.....	115,617	88,194
Less Total Exports.....	114,573	85,686
Stock, July 31, 1917—Savannah, 1,043; Charleston, 1....	1,044	2,508
Crop grown according to final ginner's report.....	117,544	91,920

EXPORTS AND RESHIPMENTS, 1916-1917.

From—	Great Britain.	Continent.	North-ern Mills.	South-ern Mills.	Canada.	Savannah.	Galveston.	Burned.	Totals.
Savannah... 1,296	173	40,974	6,514	26	125	114	49,222		
Charleston... 2	...	2,502	732	...	365	...	3,601		
Jacksonville... ..	...	43,080	...	...	...	...	43,080		
Norfolk... ..	...	1,914	...	...	...	...	1,914		
Interior points... ..	...	...	17,121	...	...	...	17,121		
Less cotton counted twice... ..	1,298	173	88,470	24,367	26	365	125	114	114,938
1,298	173	88,470	24,367	26	...	365	...	...	365
1,298	173	88,470	24,367	26	...	125	114	114,573	

COMPARATIVE STATEMENT OF EXPORTS FOR PAST SIX YEARS.

	1911.	1912.	1913.	1914.	1915.	1916.
Great Britain.....	bales 13,685	10,914	11,749	1,922	1,667	1,298
Continent.....	6,615	5,161	4,833	1,991	1,060	173
Domestic, northern mills... ..	92,679	29,451	67,636	60,879	60,822	88,496
Domestic, southern mills... ..	9,029	10,492	14,427	15,409	21,697	24,367
Galveston.....	...	...	...	...	...	125
Burned.....	...	...	...	...	...	114
122,008	56,018	98,645	80,201	85,246	114,573	

COMPARATIVE STATEMENT OF CROP GROWN FOR PAST SIX YEARS.

	1911.	1912.	1913.	1914.	1915.	1916.
South Carolina.....	bales 5,122	8,375	8,670	5,590	6,178	3,486
Georgia and Florida.....	118,190	65,266	68,820	76,008	85,742	114,058
123,312	73,641	77,490	81,598	91,920	117,544	

(Compiled by John Malloch & Co., Savannah, Georgia.)

THE MARKET FOR CHEMICALS AND COMPOUND-INGREDIENTS.

Copyright 1917.

NEW YORK.

THE metal market has been characterized during the month by a generally dull and stagnant condition, wholly due to the uncertainties pending the government's price-fixing decision. The demand for lead has been practically nil and prices nominal. The government has purchased 8,000 tons at 8 cents, St. Louis, to cover its August requirements. If the government orders are sufficient in volume to absorb surplus production, the market will continue to be firm. Should the government use 8,000 tons monthly, about one-fourth of the yearly production would be thus required.

Trading in spelter has been confined to small lots for immediate requirements, the volume of business, however, being too small to establish market prices. The government has bought 11,500,000 pounds of spelter at prices reported to range from 8.75 to 9 cents. Antimony was dull, with the demand at about zero. Price changes have been small during the month, Japanese and Chinese grades being quoted 15 to 15.50 cents New York, duty paid. The aluminum market has been colorless and prices show no change. No. 1, virgin metal, 98 to 99 per cent pure, is nominally quoted 50 cents, New York.

Business in rubber chemicals during August was fairly active for this time of the year, when the demand is usually quiet. Contract deliveries have been regularly made and inquiries for future requirements show anticipation of good fall and winter prospects in the rubber trade. Toward the latter part of the month the midsummer influence was made apparent by the diminution of business, and the market became easier. The uncertainty and firmness in the base metal market were reflected in the lead and zinc products of all sorts, resulting in a strong market position for these materials. Manufacturers of chemicals and ingredients are carefully scanning their production costs and awaiting the government's decision on the raw material price question. Until this matter is definitely settled uncertainty will dominate the market for lead and zinc products used in rubber compounds.

ACETONE. Stocks are very scarce and the production is well sold up, due to an active demand from both foreign and domestic sources. Prices are nominal, ranging from 33 to 35 cents a pound.

ANILINE OIL. The call has been steady and the producers appear to be able to meet present requirements. Prices are quoted on a basis of 28 to 29 cents.

CARBON GAS BLACK. The production cost continues to be high and prices are firm. There are practically no spot stocks, and sellers are only able to secure sufficient supplies to cover contract deliveries.

CAUSTIC SODA. The demand has exceeded the supply and there is a pronounced scarcity of available stocks. Leading producers are out of the market, which is now controlled by second hands. Prices have advanced since last month to 9 and 9½ cents a pound for 76-78 per cent caustic soda.

HEXAMETHYLENE TETRAMINE. This organic accelerator has advanced in price and is now quoted 80 cents a pound.

RECLAIMED RUBBER. This material has been in active demand, and consequently prices are firm and show a slight advance during the month. Standard shoe reclaim was quoted at 16½ to 16¾ cents, and standard tire reclaim, 21½ to 21¾ cents on August 27.

SULPHUR. Difficulties in shipping the raw material continue to restrict this market. Prices are firm and unchanged. The Export Council at Washington has discredited the report that an embargo has been placed on exports of sulphur to Canada.

TOLUOL. There are no supplies available as the government is taking over the entire production for making trinitrotoluol, one of the most valuable high explosives.

WHITING. Business has been good and the consumption of both whiting and chalk is far in excess of the supply. Prices are firm and unchanged.

ZINC OXIDE. Active demand for this material has been the feature of last month's chemical market. It is of interest to consumers to know that the time is approaching for a new schedule of prices for French process zinc oxide.

NEW YORK QUOTATIONS.

AUGUST 27, 1917.

Subject to change without notice.

Accelerene	lb.	\$2.62	@
Acetone (drums)	lb.	.33	@ .34
Acid, acetic, 28 per cent. (bbls.)	lb.	.05 1/4	@ .05 1/4
glacial, 99 per cent. (carboys)	lb.	.33	@
creylic, 97-99 per cent, straw color	gal.	1.10	@
95 per cent, dark	gal.	1.00	@
muriatic, 20 degrees	lb.	.01 1/4	@
nitric, 36 degrees	lb.	.06 3/4	@
sulphuric, 66 degrees	lb.	.01 1/4	@
Aldehyde ammonia (crystals)	lb.	1.00	@
Aluminum flake (carloads, bbls.)	ton	24.00	@
(carloads, sacks)	ton	22.00	@
Ammonium carbonate, powdered	lb.	.11 1/2	@
lumps	lb.	.10 1/4	@ .11
Antimony, crimson, sulphuret of (casks)	lb.	.45	@ .48
crimson, "Magnetico"	lb.	.45	@
crimson, "Mephisto" (casks)	lb.	.50	@
golden, sulphuret of	lb.	.25	@ .26
golden, "Magnetico"	lb.	.30	@
golden, "Mephisto" (casks)	lb.	.27	@
golden, sulphuret, States brand, 16-17 per cent.	lb.	.28	@
red sulphuret, States brand	lb.	.25	@
vermillion sulphuret	lb.	.60	@
Arsenic, red sulphide	lb.	.50	@
Asbestine (bags)	ton	21.50	@
Asbestos (bags)	ton	\$35.00	@ 50.00
Barium, carbonate, precipitated	lb.	.04 1/4	@ .04 1/4
Barium sulphate, precipitated	lb.	.04	@
Barytes, pure white	ton	32.00	@ 33.00
off color	ton	22.00	@ 23.00
Basofor	ton	80.00	@
Benzol, pure	gal.	.50	@ .60
90 per cent.	gal.	.38	@ .60
Beta-Naphthol	lb.	.70	@ .90
Brown oxide of iron	lb.	.01 1/4	@ .02
sienna, raw and burnt	lb.	.05	@ .10
umber, raw and burnt	lb.	.04 1/4	@
ochre, domestic	lb.	.02	@ .03
imported	lb.	.04	@ .04 1/4
Bone ash	lb.	.10	@
black, powdered	lb.	.15	@
granular	lb.	.20	@
Cadmium tri-sulphate (f. o. b. London)	lb.	\$2.68	@
sulphide, yellow	lb.	\$2.25	@
Canella gum	lb.	.38	@
Carbon, bisulphide (drums)	lb.	.07	@ .35
black (cases)	lb.	.27	@ .18
tetrachloride (drums)	lb.	.17	@ .09 1/4
Caustic soda, 76 per cent.	lb.	.09	@ .05 1/4
Chalk, precipitated, extra light	lb.	.05	@ .05 1/4
precipitated, heavy	lb.	.04	@ .04 1/4
China clay, domestic (powdered)	ton	20.00	@ 25.00
imported (powdered)	ton	45.00	@
Chrome, green	lb.	.40	@
yellow	lb.	.24	@ .50
Cobalt blue	lb.	.35	@
Cotton linters, clean mill run	lb.	.06	@
Excellerex	lb.	.85	@
Fossil flour	ton	60.00	@ 65.00
Gas black (cases)	lb.	.27	@ .35
Gilsonite	ton	40.00	@
Glue, high grade	lb.	.40	@ .60
medium	lb.	.30	@ .40
low grade	lb.	.25	@ .28
Glycerine, C. P. (drums)	lb.	.64	@
Graphite, flake (400 pound bbl.)	lb.	.15	@
amorphous	lb.	.06	@
Green oxide of chromium (casks)	lb.	.75	@
Ground glass FF. (bbls.)	lb.	.02 1/4	@
Hexamethylene Tetramine (powdered)	lb.	.80	@
Indian red, pure	lb.	.05	@ .08
Infusorial earth, powdered	ton	60.00	@
bolted	ton	65.00	@
Iron oxide, red, reduced grades	lb.	.04	@ .10
red, pure, bright	lb.	.12	@ .16
red, excelsior	lb.	.18	@ .30
Ivory, black	lb.	.16	@ .20
Lampblack	lb.	.14	@ .20

Lead, red oxide of	lb.	.13	@
sublimed blue	lb.	.11	@
sublimed white	lb.	.11	@ .11 1/4
white, basic carbonate	lb.	.11 1/4	@
white, basic sulphate	lb.	.11	@
black hyposulphite (Black Hypo)	lb.	.50	@
Lime, flour	lb.	.01 1/4	@ .01 1/4
Litharge, domestic	lb.	.11 1/4	@ .12 1/4
English	lb.	.13 1/4	@ .14
sublimed	lb.	.13	@
Lithopone, imported	lb.	.13	@ .14
domestic	lb.	.06 1/4	@
Beckton white (carloads)	lb.	.06 1/4	@
Magnesium, carbonate, 150 mesh	lb.	.02	@
calcined, heavy, Thistle Brand	lb.	.12	@
light	lb.	.70	@ .75
Magnesium, oxide, 120 mesh	lb.	.04	@
Magnesite, calcined, powdered	ton	40.00	@ 50.00
Mica, powdered	lb.	.03 1/4	@ .05
Mineral rubber, "M. R. X."	ton	100.00	@
"Genasco" (carloads)	ton	\$37.00	@
"Pioneer"	ton	45.00	@
"Richmond Brand"	lb.	.03	@
"No. 64 Brand"	ton	40.00	@
"Refined Elaterite"	lb.	.05	@
Naphtha, stove gasoline (steel bbls.)	gal.	.24	@
66@68 degrees (steel bbls.)	gal.	.29	@
68@70 degrees (steel bbls.)	gal.	.30	@
V. M. & P. (steel bbls.)	gal.	.23	@
Oil, aniline	lb.	.28	@ .29
corn, refined Argo (carloads)	cwt.	16.21	@
linseed (bbl.)	gal.	1.25	@
palm	lb.	.16	@ .17 1/4
paraffin	gal.	.27	@ .28
pine, steam distilled	gal.	.47	@
pine tar	gal.	.28	@
rapeseed, blown	gal.	1.45	@ 1.50
rosin	gal.	.35	@
tar (cases)	gal.	.27	@ .34
soluble aniline colors, yellow, orange	lb.	2.50	@
Orange mineral, domestic	lb.	.15	@
Paragol, soft and medium (carloads)	cwt.	11.95	@
hard	cwt.	11.45	@
Petrolatum	lb.	.05 1/4	@
Petroleum grease	lb.	.04 1/4	@ .04 1/4
Pine tar retort	bbl.	15.00	@
pitch	gal.	2.90	@
Burgundy	lb.	.04	@
coal tar	lb.	.01	@
pine tar	lb.	.02 1/4	@
Plaster of paris	bbl.	2.00	@ 3.00
Prussian blue	lb.	.80	@ 1.50
Pumice stone, powdered (bbls.)	lb.	.03 1/4	@
Reclaimed rubber, Standard shoe reclaim	lb.	16 1/4	@ .16 1/4
Standard tire reclaim	lb.	21 1/4	@ .21 1/4
Resin, Pontianak, refined	lb.	.28	@
granulated	lb.	.25	@
fused	lb.	.23	@
Rosin, K. (280 lbs.)	bbl.	6.50	@
Rotten stone, powdered	lb.	.02 1/4	@ .04
Rubber black	lb.	.06	@
Rubber substitute, black	lb.	.09 1/4	@ .14
white	lb.	.14	@ .20
brown	lb.	.15	@ .20
Rubhide	lb.	.38	@
Shellac, fine orange	lb.	.62	@ .65
Silex (silica)	ton	20.00	@ 36.00
Soapstone, powdered	ton	16.50	@ 20.00
Starch, powdered corn (carload, bbls.)	ton	6.33	@
(carload, bags)	ton	6.20	@
Sulphur chloride (drums)	ton	.09 1/4	@ .09 1/4
Sulphur, flour, velvet brand (carloads)	ton	3.95	@
pure soft	ton	3.95	@ 4.50
Talc, American	ton	16.50	@ 20.00
French	ton	47.50	@ 48.00
Tar, coal	ton	4.25	@
Toluol, pure	ton	1.75	@ 2.25
Tripoli earth, powdered	ton	60.00	@
bolted	ton	65.00	@
Turpentine, pure gum spirits	ton	.43	@
wood	gal.	.38	@
Venice	lb.	.08	@
Tyre-lith	ton	100.00	@
Ultramarine blue	lb.	.22	@ .50
Vermilion	lb.	.65	@ .80
Chinese	lb.	2.50	@
English	lb.	1.90	@ 2.00
Wax, beeswax, white	ton	.68 1/4	@ .70
ceresin, white	lb.	.20	@ .24
carnauba	lb.	.41	@ .55
cokerite, black	lb.	.48	@ .60
green	lb.	.68	@ .70
montau	lb.	.32	@ .33
paraffin, refined 118/120 m. p. (cases)	lb.	.09 1/4	@
123/125 m. p. (cases)	lb.	.10	@
128/130 m. p. (cases)	lb.	.11	@
133/136 m. p. (cases)	lb.	.12 1/4	@
Whiting, Alba	cwt.	1.00	@ 1.25
commercial	cwt.	1.25	@
gilders	cwt.	1.35	@
Paris, white, American	cwt.	1.50	@
English cliffstone	cwt.	1.75	@ 2.00
Wood pulp XXX	ton	.75	@
Yellow ochre	ton	.35	@
India rubber	lb.	1.50	@
Zinc oxide, American process, horsehead brand	lb.	.10 1/4	@
"XX red"	f. o. b. factory	.11	@
"special"	f. o. b. factory	.15 1/4	@
French process, red seal	f. o. b. factory	.15 1/4	@
green seal	f. o. b. factory	.15 1/4	@
white seal	f. o. b. factory	.16 1/4	@
Zinc sulphide, pure	lb.	None	@

* Nominal prices.



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